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AMSTRAD Computer User



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The official magazine for all users of the Amstrad CPC series

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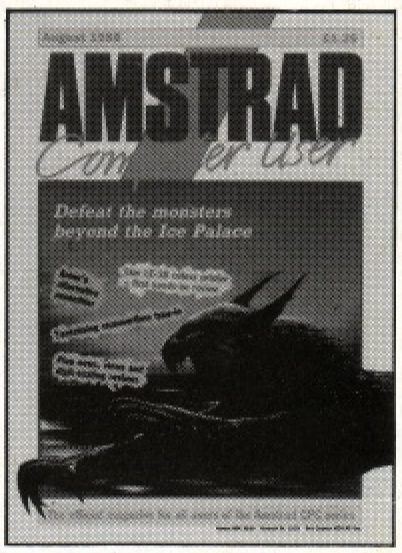

TAKE 'EM ALL ON...
IT'S THE ONLY WAY TO LIVE!
Screen Star
Target Renegade is hugely entertaining and ample justification for a sequel ...it develops the theme and develops the game play no end on the original...Each man is four sprites ...all beautifully drawn with great comic touches. The dog is quite wonderful. Commodore User
TARGET; RENEGADE
PCW GAME OF THE WEEK
Target Renegade has the added essence of variety, which is not to be found on other games of this kind. Fear not, this is well worth the readies. PCW Game of the week
1P:001800
2P:000000
PAUSED
WAKELIN.
Every move you make, every step you take, they're watching you. Fight your way through the precinct – the back alleys, the car parks, fight your way through the villainous community, the skin-heads, the Beastie Boys, the bouncers. On a hot, steamy night in New York this is just the tip of the iceberg on your chilling quest to confront "MR. BIG". A spectacular arcade style brawl with many hoodlams and hellhounds to encounter – this is target Renegade – if it moves, it hurts!
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AMSTRAD *Computer User*

The official magazine for Amstrad CPC users

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August 1988



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REVIEWS

Editorial and Advertising offices:
169 King's Road, Brentwood, Essex CM14 4EF.
Tel: 0277-234459 (Editorial); 0277 234434 (Advertising)
Telecom Gold: 72:MAG021

ABC 63,599 Jan-June 1987

Published by Avralite Ltd, Adlington Park, Adlington, Macclesfield SK10 4NP.

News trade distribution: Diamond-Europress Sales & Distribution Ltd, Unit 1, Burgess Road, Ivyhouse lane, Hastings, East Sussex TN35 4NR. Tel: 0424 430422.

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Computer User NEWS

World first-I

THE UK's leading adventure games house has notched up a world first by developing triple format discs for its titles.

Level 9's technological breakthrough means that one disc can be run on three incompatible machines. This provides an immediate boon for retailers in that they need stock only one disc to cover three versions of a program.

The single discs will run on the CPC, PCW and Spectrum +3 machines, with all three formats including pictures.

The first Level 9 adventure to be released using the triple format disc will be Time & Magik on the Mandarin label, followed by Gnome Ranger.

"Traditional dual format discs, whether floppies or otherwise, have in effect one version on each side", explained Pete Austin of Level 9.

"This is obviously wasteful of space, as two complete copies have to fit on one disc.

"Our new triple format discs use quite a different approach and have just one copy of the game filling most of the disc. Side A contains the program, while side B contains compressed pictures.

"The game itself is the same for all the computers, and we have a small amount of machine-specific code to handle things that differ like keyboard scanning, disc files and picture display.

"The machine-specific code is partitioned off into what we call drivers – separate libraries of machine code routines. There are three drivers on the disc, one per computer supported.

"Producing a multi-format disc in this way is technically quite difficult, but takes up very little space, meaning players get the best possible game".



The Level 9 team

World first-II

THE world's first Olympiad for computer programs will take place at the Park Lane Hotel, London, from August 9 to 15 next year.

This unique event will feature tournaments for chess, bridge, backgammon, draughts, poker, Go and many other classic "thinking" games. Any individual, or a company, school or other educational institute that has written a computer program along these lines will be eligible to take part.

In every tournament all of the competitors will be computer programs. The role of the human operators will merely be to tell their own programs what moves have been made by their opponents.

The Computer Olympiad is organised by international chess master David Levy, who is president of the International Computer Chess Association. Anyone who wants more information on the event should send a large stamped addressed envelope to: Computer Olympiad, 11 Loudoun Road, London, NW8 0LP.

CPC coded coin-op

In July, Go! is to release the official coin-op conversation of Capcom's incredibly successful arcade hit, Streetfighter.

Coded on the Amstrad by Tiertex (Rolling Thunder, 720, Indiana Jones), Streetfighter takes you on a trip around the world in an attempt to become the world's greatest streetfighter.

On your travels you visit Japan, UK, China, USA and Thailand in five levels of blood pumping combat. (Who writes this stuff?)

Hunt for top Z80 talent

MICROPROSE is now looking to expand its UK base of in-house programmers.

According to the company's software development manager, Tony Bickley, MicroProse is now on the lookout for young, enthusiastic and well motivated Amstrad programmers.

"Because of customer demand, we are initially looking for people to enlarge our Z80 product base. We are well aware of the high standard of UK programmers and are especially keen to talk to young and hungry staff keen to grow with us."

The new posts will be at MicroProse's office and warehousing complexes in the beautiful Cotswold market town of Tetbury. For further information contact Tony Bickley on 0666 54326.

Powerplay for prizes

THE hunt is on to find The Power House games player of the year.

The company is inviting the public to send details of their highest scores on The Power House games. The individuals who gain the highest score for each game will be invited to the Wimbledon offices for the Grand Final in November.

On offer as prizes to each game champion are 20 free games, and the overall champion will receive 30 free games plus a top quality Sony personal stereo.

The Power House managing director Ashley Hildebrandt said: "I think this sounds like a great idea, and I am sure that everyone who enters will have lots of fun not only playing the games, but also competing for the prizes. I suppose you could call this the Wimbledon of the computer games calendar".

To enter the competition, all potential champions have to do is send photographic evidence of their claimed high scores together with their name and address to Andy Blazdell, The Power House, 204 Worple Road, Wimbledon, London, SW20 8PN.

Entries must be received by October 10.

Time and magik

The trilogy



Interactive fiction from Level 9







Screen shots from Atari ST version

Three of Level 9's most acclaimed adventures – Lords of Time, Red Moon and The Price of Magik – come together in one package. Each has been enhanced and enlarged with more text than ever before – 60,000 mind-expanding words creating magik and mystery round every corner. There's a powerful new parser, and most disc versions include stunning digitised pictures that help to dramatically heighten the atmosphere.

What the press have said:

LORDS OF TIME: ***"Destined to become a classic"*** – *Computing with the Amstrad.*

RED MOON: ***Best Graphical Adventure or Best Adventure of the Year*** – *Zzap 64, Crash, Amtix, C&VG, CCI, and Amstrad Computer User.*

THE PRICE OF MAGIK: ***"Another superb adventure . . . their best yet"*** – *Commodore User. Also a Crash Smash.*

Spectrum (cassette) Plus 3 (disc) Commodore 64 (cassette or disc) Amstrad CPC (cassette or disc) Atari XL/XE (cassette or disc) Amstrad PCW (disc) Apple II (disc)	Atari ST Commodore Amiga Macintosh Amstrad PC, IBM PC and compatibles
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Budget encore

IN recent times there has been a marked increase in the budget charts of re-issued full price games, and Elite Systems has now taken the decision to utilise the depth and strength of its back catalogue to succeed in this sector of the market.

Elite sees this move as opening up further marketing opportunities and as a natural extension to its existing business. However, managing director Brian Wilcox, is quick to point out that Elite's core business will still be the development of high quality full priced software.

"I think it's very important that our customers and consumers understand right from the outset that they can continue to expect quality software from Elite, and that it will not be available as budget software for a period of some three years", he said.

"This will still allow the new range to release a multi-format game every month, and I believe our customers will appreciate that we have kept faith with them in refusing to devalue our products too quickly".

The forthcoming budget range will be marked under the brand name of Encore, the theme being to call upon the hits of the past for a repeat performance.

Encore will be releasing products at the proven price of £1.99. The range will include such well known titles as Frank Bruno's Boxing, Commando, Airwolf, Saboteur, Bombjack and Ghosts'n'Goblins.

Flight of fancy



Sid Meier and Bill Stealey with the Red Baron arcade game which spurred the formation of MicroProse

AFTER nearly a year of detective work and a touch of good luck on the part of MicroProse's US staff, the fabled arcade machine that prompted Bill Stealey and Sid Meier to start their company now occupies a place of honour at the Hunt Valley headquarters in Maryland, USA.

The story starts back in the summer of 1982 when Meier and Stealey played Red Baron, a World War I air combat game, at MGM's Grand Hotel in Las Vegas.

At that time, though they had met for the first time at the Nevada town, both men worked for the same large organisation. Programming genius Meier said he could write a better game on his home computer. Never one to turn down a challenge, Stealey added that he could sell it.

Their conversation led to the development of Hellcat Ace, the World War II air warfare game that launched MicroProse.

At the turn of last year the company's staff decided to find the machine that spurred what is today one of the world's leading home computer software organisations.

Locating this memento, however, would prove a little more difficult than had been anticipated. The first problem was that the Grand Hotel had changed hands.

The new owners, Bally, had dismantled the arcade and MicroProse's staff initially feared that all the machines had been sold off, never to be seen again.

After persisting with the quest for some time, it came to light that all – including Red Baron – had been stored in Nevada.

MicroProse higher-ups had contacts at the executive offices of the Bally Corporation. There, well placed friends ensured swift negotiations and a purchase of the Red Baron machine.

It was soon winging its way to the East Coast US offices of MicroProse where it was presented to Bill Stealey and Sid Meier at a company gathering.

Despite being renowned for their ruthlessly detailed simulations rather than their sentimentality, MicroProse's employees are now happy that the Red Baron, at long last, is where it belongs.



Twins out on a limb

LIVING at home with their parents, the Oliver twins – Britain's best selling computer games programmers – have run out of room.

The twins have just started converting Professional BMX Simulator to the CPC, and have found they have nowhere to put the new development tool they need.

So they have decided to buy themselves a house. Phillip (or is it Andrew?) is amused. "Everyone leaves home eventually, but to be forced out by a computer is distinctly different".

Pretty potty...



A COUPLE of months ago we told you about Gonsoft's Gon Potty Award. Just to remind you, the first registered purchaser to send Gonsoft the solution to its Videoworld adventure will win £100 plus a unique potty, hand-crafted by Le Dieu Pottery of Norwich.

Here is photographic evidence of said award. Not perhaps as Earth shattering as discovering the Abominable Snowman, but it is definitely unique.

And the girl with the peculiar head gear? Gonsoft says her name is Jerry.

Further potty details from Gonsoft on 0603 484426.

ROMANTIC ROBOT *present*

1988 – THE YEAR OF THE ROBOT



Q: WELL, I'VE HEARD OF THE YEARS OF THE CAT, PIG, AND EVEN DRAGON – BUT THE YEAR OF THE ROBOT?

A: Absolutely! And ROMANTIC ROBOT wish to make 1988 a truly memorable year (if not us, who will?). To kick off with, there is an INTRODUCTORY OFFER OF **£29.88** ON RODOS, plus a truly unique 1988 SPRING MAIL ORDER PRICE OF MULTIFACE TWO – **£42.88!**

Q: I LOVE SALES. BUT WHAT'S SO LIKEABLE ABOUT RODOS and MULTIFACE?

A: RODOS is too powerful and complex to be summed up here – please send a SAE for full info. MULTIFACE is (simply) a MUST for ANY CPC owner: it can copy and change programs as you wish.



Q: OH, DO I NEED TO DO ANY PROGRAMMING TO MAKE BACK-UPS?
A: NO! – NOT with the MULTIFACE TWO – it is in fact the ONLY product on the market which works FULLY AUTOMATICALLY. You LOAD any program as usual, RUN it for as long as you like and when you wish to make a copy you just press the MULTIFACE's red button and follow the menu and on-screen instructions.

Q: HOW DOES IT WORK THEN? IS IT EASY? USER-FRIENDLY? ERROR-TRAPPED? IDIOT PROOF? GUARANTEED?
A: YES! It works a treat and it could not be easier. The menu gives four basic options – to **SAVE** a program, to **RETURN** to continue it, to **JUMP** (say to your own routines – invaluable for hackers) and **TOOL** to access the MULTI-TOOLKIT set of built-in utilities. For example pressing **S** to **SAVE** will first allow you to **NAME** the back-up and then let you save a **PROGRAM** or just a **SCREEN** to **TAPE** or **DISK**. Before the saving itself, MULTIFACE compresses the program so that it takes the least amount of space on tape/disk and will re-load as quickly as possible. Once a program is saved, you can **RETURN** or **JUMP**, use the **TOOLKIT** to change it, **SAVE** it again, etc.

Q: DON'T YOU CORRUPT THE SCREEN WITH YOUR MENU, INSTRUCTIONS, PULL DOWN WINDOWS, ETC.?
A: NO. MULTIFACE TWO has its own memory (8K ROM & 8K RAM) and a lot more hardware – thus when it finishes its job or when you re-load your back-ups, everything is **FULLY** and **AUTOMATICALLY** restored: screen modes, colours, windows, etc. This is essential and NO OTHER DEVICE CAN DO IT!

Q: OK, SO MULTIFACE CAN COPY FROM TAPE TO DISC, BUT CAN IT DO TAPE TO TAPE OR DISC TO DISC OR DISC TO TAPE?
A: Of course it can. MULTIFACE saves either to tape or disc and it saves whatever happens to be in the computer at that time – no matter how you loaded it in.

Q: SO FAR SO GOOD. BUT CAN'T I DO ALL THIS WITHOUT THE MULTIFACE?
A: ABSOLUTELY NOT! First, you need a hardware device, a "magic box", to be able to stop and copy programs AT ANY STAGE – be it upon loading, half-way through the game, etc. Tape/disc copiers can only try to copy programs BEFORE they load: if there are unorthodox loaders, speedlocks, protections against copying, etc., you'll end up with a problem – but not with a back-up. Also, with MULTIFACE you can poke infinite lives, ammunition, etc. – and then SAVE.

Q: MULTIFACE IS NOT THE ONLY 'MAGIC BOX' ON THE MARKET – WHY SHOULD I BUY IT MORE THAN ANYTHING ELSE?
A: There are four devices on the market. Action Reply by Datel Electronics, Disc Wizard by Evesham Micros, Mirage Imager and MULTIFACE TWO. Each manufacturer would naturally argue his product is the best buy – fortunately (for you and us), MICRONET recently compared all four units and MULTIFACE TWO came out the best in literally all respects: the most successful one – 100%!, the ONLY AUTOMATIC ONE, the FASTEST ONE both in LOADING *AND* SAVING time, the one taking the LEAST ROOM when saving – and you still get a couple of EXTRAS: a RESET button and an extensive and unique MULTI-TOOLKIT.

Q: MULTIFACE IS IT! THE RIGHT THING IN THE RIGHT TIME! IF ONLY IT PAID FOR ITSELF...
A: But it does! By the time you buy 8 programs on tape instead of disc, you will have saved £40 – the cost of the MULTIFACE. The money you save on further programs is all yours .... **MULTIFACE ✱ worth every penny, saves you pounds!**

Romantic RObot Disc Operating System

Just one ROM will turn your CPC into a professional set-up: With RODOS you can attach additional disc drives – 40/80 track, single/double sided and store more than 800k per disc.

RODOS **NEW**

But RODOS is in fact much more than a fast and perfect DOS. RODOS also gives you RANDOM ACCESS, PRINTER BUFFER, full ROM manager, SILICON DISC, altogether 54 new bar commands, enormous power – all this and much more for £29.88 only!

multiface two

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The special price of £42.88 applies strictly to mail orders received with the coupon below before the 31st July, 1988

Tape-to-disk at the touch of a button. Ridiculous, you may say, but it works every time. *Multiface* can stop any program in its tracks and save the program from memory to either tape or disk. It's completely fool-proof. Similar products have had problems with screen size, colour and even sound; *Multiface* can handle all these without a second thought.

That alone would have satisfied many people, but Romantic Robot has gone one step further, incorporating a memory editor. No program is safe with this: everything is out in the open, including the Z80 registers, CRTC data and any part of memory.

Don't be fooled into thinking this will result in mass piracy, however. The *Multiface* unit itself must be plugged into your Amstrad to allow reloading of a program it saved.

Multiface II must be the cleverest hardware device at present – a necessity for disk owners who thought they were stuck with loading from tape every time.

AMSTRAD ACTION JANUARY 1987

THE YEAR OF THE ROBOT · BE PART OF IT

I order MULTIFACE 2 (£42.88) ☐ / RODOS (£29.88) ☐ plus p&p UK £1, Europe £2, Overseas £3

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Pokes pointers

I AM 13 years old and new to computers. I don't know what a poke is or how to run one. Please tell me how I can cheat at the games you give pokes to when I haven't got a clue what to do or where to type things in.

Andrew Ramsay
Church Stretton
Shropshire

LD: *In general, the pokes in ACU replace the loaders on the original tape or disc that the game comes on. You would type in the poke and save it on to one of your own tapes or discs, then insert the rewound game into the cassette deck or disc drive, then type RUN.*

Rodos reprise

THE deciding factor for purchasing the Rodos rom was obviously to fit a second 5.25in drive. After reading Jeff Walker's review, I went ahead and purchased the rom, only to find that Jeff's examples were mostly direct reprints from the inadequate manual supplied.

As I am not an expert programmer, I would like to suggest that you do a follow up article on this excellent operating system, explaining in particular how to connect up a second drive and also the use of the OPT command which directly controls the drive's operating system. For instance, by changing the parameters, will this speed up access time or possibly damage the drive?

Stuart Peters,
London N11

LD: *The answer to your problem isn't a follow up article, which could do no more than scratch the surface, but RR's follow up product, Rodos Xtra.*

It was because the manual is inadequate, and because the early versions of Rodos had bugs, that Jeff was forced to use some of Romantic Robot's own examples in his review. The disc formatter program, however, was all his own work.

Yes, changing the parameters with OPT could speed up access time. And yes, it could possibly damage the drive.

Taste of honey

SOMETHING has happened to my DMP2000 printer. It has had very heavy usage, and recently it developed an annoying loud buzzing sound. It buzzes even when it is switched off.

I then tried taking the mains plug out, but leaving the computer lead in. The buzzing stopped, but resumed after replacing the mains plug.

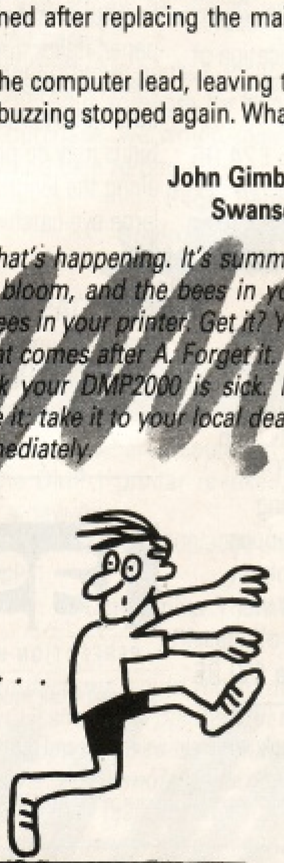
I then removed the computer lead, leaving the mains plug in. The buzzing stopped again. What's happening?

John Gimber,
Swansea.

LD: *It's obvious what's happening. It's summer, the flowers are in bloom, and the bees in your printer want out. Bees in your printer. Get it? You know, the letter that comes after A. Forget it.*

Seriously, I think your DMP2000 is sick. My advice is not to use it; take it to your local dealer for a check up immediately.





Send your letters to:
Lance Davis
Letters Editor
Amstrad Computer User
169 Kings Road, Brentwood
Essex CM14 4EF

Basic blunder I

Might I suggest that Jeff Walker was not as logical as he suggests, particularly in Figure III on page 43 of your June issue. I believe that lines 3 and 4 have been changed.

Thank you for starting the Auntie John series, as this looks interesting.

C.J. Cheesman,
Ivybridge, Devon.

Basic blunder II

Ref: the June 1988 *ACU*, page 43. Figure III arrives at the correct solution, however the solution printed is illogical.

While I've got your attention, I took up a subscription at the beginning of this year. Is there some reason that I didn't get a membership card?

M. Gambrill,
Strood, Kent.

LD: *Ah yes. Sorry. The typesetting lads accidentally transposed those two lines in Figure III. Nice to see you're on your toes though; prizes in the post to both of you.*

I think you are getting us mixed up with the User Club, Mr. Gambrill. If you join the club you get a membership card and 12 magazines; if you subscribe to ACU you get 12 magazines.

Openin time

HAVING typed out and recorded a mailing list of 50 names and addresses, all my 464 does when I try to load them is print "Loading MAIL LIST" followed by "Direct command found". So what do I do from here? Please, please help me as I have two other programs like this copied from 100 Programs for the Amstrad 464.

M.R. Bridges
Westcliff, Essex.

LD: *You're trying to load an Ascii data file into memory with the Basic LOAD command. LOAD is only used for loading Basic or binary (machine code) files. The commands you need to load your mailing list are OPENIN and INPUT#9.*

An immediate answer to your mailing list problem would be to use and study the next two listings in your program book, P30 and P31. These are both meant to be used in conjunction with P29.

The long term answer is to get yourself a good book on Amstrad Basic. For out and out beginners, there isn't a better first book than Book 1 in the Watson's Workbook series. It's published by Glentop, written by Sean Gray and Eddy Maddix, and titled Amstrad Book 1: Starting Basic. You can contact Glentop on 01 441 4130.

German power

WE are shortly off to live in Germany for a few years and we would like to know if the power supply is OK for us to use our 6128 there.

Meanwhile we need to learn German as quickly



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A suite of fast machine code screen copy software for the CPC computers. Print high resolution screen copies in black and white and also large "shaded" copies with different dot densities for the various screen colours. TASCOPY can also print "poster size" copies — screen copies printed onto two or four sheets can be cut and joined to make the poster. **Disc £12.90 Cassette £9.90**

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as possible. We thought a computer Scrabble game might be a fun way of expanding our vocabulary, but in Germany last weekend we drew a lot of blank stares when we asked if one exists. All games seem to be in English only. Does a German computer Scrabble exist?

Fiona Hutchinson,
Chesham, Bucks.

LD: You should be able to plug your 6128 straight into the German mains once you've changed the plug.

As for a German computer Scrabble, the only languages available for the Amstrad are English and French. There is a German board version, so why you got blank stares I do not know, but there seem to be no plans for a German version in the near future.



Loads of art money

I WOULD like to buy an art software package, but looking through *ACU* there are hundreds to choose from – including your own offer for Rainbird's OCP Art Studio.

The trouble is, I only have the basic 464, no 64k ram, no disc, no mouse – in fact, the only gizmo I have is the free SSA-1 that came with it.

I'm looking for something costing up to £25. What do you reckon is best for that kind of money?

Ian Campbell,
Seaford, E.Sussex.

LD: Your best bet is probably Amsoft's Screen Designer, available from all good stockists.

The sound of silence

FIRSTLY I would like to thank *ACU* on behalf of Graduate Software for the recent news piece and featured review. However, both of these articles asked questions about the legality of our recent product release.

Our company does not sell CP/M+ on rom; what we do is to help authorised owners of CP/M+ to copy their software on to a different medium, eproms. We then supply our own loader which also loads our CP/M+ extensions.

In order to preserve Digital Research's intellectual property, we have taken the following precautions:

1. We have written to and phoned DR's contracts department in Reading. We have received no negative replies.
2. We insist on the original CP/M+ as proof of purchase.
3. We transfer the customer's name, address and serial number on to our roms. This is displayed completely in CP/M+ power up and partially during Amsdos power up colouring the top quarter (not half) of the screen red. These measures provide improved protection.
4. We have studied DR's contract and taken legal advice – all favourable.

Without case law the legal question is difficult to evaluate. However, our defence under natural law is indisputable. We are not creating new owners, neither are we assisting others in piracy.

Furthermore, can something be illegal when there is no aggrieved party?

Finally, if any other software houses, including DR, would like to copy our software for owners with our proof of purchase, we would raise no objection if they would care to phone.

Roger Bamkin,
Graduate Software
0272 656659

Ribbon hunter

PLEASE could you tell me where I could get the ink cartridge for the DMP-1 printer re-inked, or where I could buy a new one.

I was wondering whether DMP2000/3000 paper would fit in the DMP-1.

Christopher Thornton,
Riccall, Yorks.

LD: No printer manufacturer would recommend ribbon re-inking, and it should be pointed out that if a re-inked ribbon happened to cause damage to your print head, neither the manufacturer nor the ribbon re-inker will be held responsible.

Having said that, many users, myself included, have lived for years on regularly re-inked ribbons. Try Aladdink, 4 Hurkur Cres, Eyemouth, TD14 5AP.

DMP-1 ribbons have always been hard to find, and if you do manage to find a supply, don't tell anyone! If it's any help, they are exactly the same as Commodore MPS-801 ribbons.

The DMP-1 uses exactly the same size paper as the DMP2000/3000.

On reflection

A COUPLE of misprints wormed their way into last month's Reflections listing. The following corrections are in order:

```
1070 DATA 00,ac,00,bd,00,c7,00,d1,301
1320 DATA bc,e5,cd,11,bc,2a,60,02,3c7
```

Big drive advice

I HAVE two 664s, each with 64k extra ram, rom boards and FD-1 disc drives. I have been considering buying a 5.25in drive and Rodos, but need advice.

As I could find no information in the Amstrad magazines, I wrote to Romantic Robot for the name of a supplier of suitable drives. They advised me to buy a magazine for the BBC Micro. This I did, but am no wiser as most of the disc drives advertised are not for the CPC.

I then wrote to Just Drive to be told that they could supply a second drive for the 464 if a first one was already fitted. A great help!

In your June issue you have an article on Rodos Xtra, so obviously you should be in a pos-



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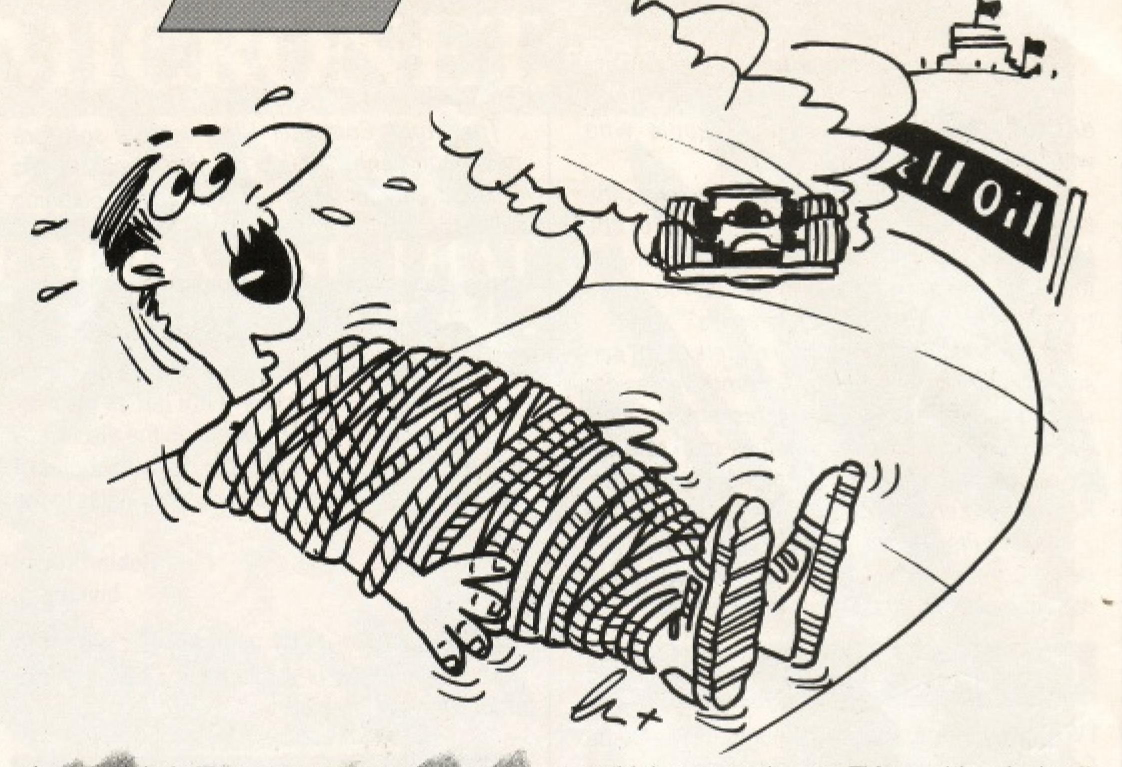
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ition to advise me. Can you please give me the name and address of a supplier who can let me have a suitable drive and say whether I need anything extra like special connecting leads or interfaces?

LD: KDS do a 5.25in second drive (your first drive is the one built in to the 664). It's a double sided, double density, 80 track drive that operates at full capacity under Amsdos, CP/M 2.2 and CP/M+. It comes with KDS's own software on disc or rom, but there is no reason why you couldn't replace this with Rodos. KDS can be contacted on 04853 2076.

Prime time

HERE's a little program to kill the prime numbers saga stone dead. All the primes up to 10,000 in about two seconds (it takes a while to print them though).

```
100 nr.primes=10000
110 MEMORY &1FFF
120 FOR n=&2000 TO &2040:READ v$
:POKE n,VAL("&"+v$):NEXT
130 CALL &2000,nr.primes
140 FOR n=1 TO nr.primes
150 IF PEEK(&2041+n)THEN PRINT n;
160 NEXT
170 END
180 DATA dd,4e,00,dd,46,01,0b,11,42
190 DATA 20,21,41,20,36,ff,ed,b0,11
200 DATA 02,00,21,41,20,19,cd,2d,20
210 DATA d0,af,b6,c4,24,20,13,18,f0
220 DATA af,19,cd,2d,20,d0,77,18,f8
230 DATA d5,e5,11,41,20,a7,ed,52,dd
240 DATA 5e,00,dd,56,01,a7,ed,52,e1
250 DATA d1,c9
```

Richard Brooksby,
Chandlers Ford, Hants.

LD: Even though your routine is very greedy with memory, we are impressed. So impressed that we are sending you a prize. Now go away and calculate pi.

Copysprite ACU

HELP! My big toe (where my brain cell is) throbs like mad. I have just removed the data for creating the ever so wonderful RSX SPRITE from the Isobot listing, but I am having a little bit of trouble.

The command works fine, and it should be a great deal of use. However, I cannot work out what numbers refer to what colour patterns. Even after 10 cups of iced tea with no ice, I cannot work it out. Is there a chart showing this data?

There is one other small thing I would like to know. Is there any copyright on this command which will stop me from using it in my own programs and then publish them in a magazine?

Rafe Aldridge,
Woodford Green, Essex.

LD: Sorry, Rafe. No, there is not a chart explaining how to use the SPRITE command. You'll just have to grow another brain cell, drink some more iced tea, and work it out for yourself.

And when you do work it out, remember that the copyright belongs to us. This means that any program you use our SPRITE machine code and command in can only be published in ACU.

Dodgy daddy

WHAT I most want is my father to play games with me on my 464. But he won't.

He told me, I could get a joystick in the shape of a steering wheel and not a stick. That way he could play a car simulation just like the arcade.

Is there such a joystick?

B Dubiner,
London NW11.

LD: After a short debate in the ACU office, we've come to the unanimous conclusion that your father is a wicked person not to play games with you and Arnold.

We think he probably knows there isn't a steering wheel-shaped joystick for the 464, and that he is just using that as an excuse.

Furthermore, we think as a punishment he ought to take a week off work and play car simulation games with you for eight hours every day. That way he'd learn how to use a proper joystick.

Building design

I NOTICED in the June issue a letter from S.J.J.Perkins enquiring about suitable software for building design.

I think you ought to know that our Parrotry Plus package would be most suitable and fulfils the criteria mentioned almost exactly. It has excellent scaling features, can drive just about every plotter on the market, and can be used with a mouse.

The plotter test and demo drawings we supply are a set of architectural drawings.

Mervyn Rogers,
Treasure Island Software
0492 530229

Start with Pascal

IN your reply to R.H.Williams you did it again! How can you say that other languages didn't score highly in last year's survey? Thirty eight per cent said they wanted the same and 35 per cent said they wanted more. This would undoubtedly have been higher if *ACU* would inform their readers better.

How can anyone say they don't want other languages if they don't know what the choice is? The only thing I've seen so far is a write up on what might be the worst compiler on the market. Not a very balanced survey, is it?

Every month someone asks about Pascal and every month you either don't publish their letter, ignore their requests, or mislead them altogether. As the leading periodical on the Arnold, I think you are avoiding your responsibilities.

Another example appeared in the June issue from "R" of Harrogate. If *ACU* had done its job he would have realised that his choice would depend on the application.

He should start with Pascal as this is not only a useful language but a good way to learn structured programming – essential if he wants to go on to other modern languages.

What an excellent mini series we have just had from Pat Winstanley. To struggle on trying to explain adventure games in Basic shows amazing perseverance. As she says in the last paragraph, programming in Basic is not viable.

I wish she had said what she would recommend – or was that struck out? So now we are left full of enthusiasm to try our own adventure knowing that anything we do in Basic will be a waste of time.

After that excellent Assembly Point series finished I started to suffer from withdrawal symptoms. It looks like this is about to be rectified by Auntie John. I can see some advantages in making the subject light hearted; I hope he doesn't overdo it and make it harder to understand than necessary. Good luck to him anyway.

Overall *ACU* is not a bad mix, if only you would read your survey results again. You don't want to end up like Amtix! do you?

R.L. Thompson,
Southampton.

LD: Yes, 38 per cent of our readers – the majority – wanted the same amount of space allocated to other languages. The previous allocation was zero, the new allocation was zero. We are having

difficulty accommodating the people who wanted less than zero.

For various good reasons we can't always publish every letter we receive, but, published or not, letters and suggestions are never ignored. Neither would we intentionally mislead anybody. We try to give unbiased, objective replies.

Pat Winstanley's throw away remark was a personal opinion. The speed of Locomotive Basic is such that fairly large adventures are not only viable, but have been successfully marketed by, to name just one big name, Mastertronic. Remember Kentilla? And that had graphics.

The results of last month's survey are still being collated. When we have the results, you can rest assured that we will act on them.

Good offer?

I WAS wondering what you thought of The Home Computer Club. Is it a good offer, or do you find that when you get their magazine you have a choice of about four games that you don't want?

Paul Johnston,
Glasgow

LD: *The best way to find out what they have to offer is to fill in the form and send it off to them. Whatever you first order is on 10 days approval, so if you don't like what you see you quickly return the goods. All it costs you is a few stamps.*

The Home Computer Club vets its software most thoroughly. If it is in the club magazine, it is finished and for sale, not still in the planning process.

Robin Hood

A FEW months ago I bought a utilities disc from you, but unfortunately I have not got all the relevant mags for all the programs on the disc. I was wondering if you could supply me with copies of the original articles so I can use the utilities to the full.

Robin Brown,
Inverness.

LD: *The "pack of eight magazines" relevant to Utilities Unlimited is available at £6.60, see the order form on page 89.*

A dream come true

THE answer to the question "Who was the female star of Mad Max III?" is Tina Turner. See? We're not so isolated. Does this mean you'll be sending me something in the post?

Don't get me wrong, I'd never stoop to grovelling, but you must understand (music please) I've come from a very poor family. My mother works herself to the bone just to supply us with a meal every Christmas, and my father, he can hardly move any more.

Me and my 13 brothers and sisters have to search through public bins for our school lunches, and more often than not we go without.

But I can honestly say that things haven't been all bad. Like the time when I was searching for my lunch and I happened to find 700 dollar bills.

I immediately thought of my brothers and sisters and what they'd like me to get with the money. So, out of the kindness of my heart I bought a computer. An Amstrad CPC464 + disc drive, to be precise.

Our family was filled with joy and wonder with the new machine. That is, until the next meal time came.

So now you know of my situation – my poor, poor situation. It would be like a dream come true to our poor deprived family if you would even consider this letter as a possible winner.

You'll have to excuse me now, I have to bring in the rubbish, the children are waiting.

David DeSciscio,
McLaren Vale,
Sth Australia.

LD: *We were going to send you some software, but on consideration we thought we'd send you a sandwich instead. It may be a bit mouldy by the time it gets through customs.*

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A Star is born

A colour printer at black and white money? Rupert Goodwins is impressed with the LC-10's price and the performance

THE big fall in dot matrix printer prices seems to have halted of late. It is now possible to get a good quality NLQ printer for about £150, so what happens next with low-end printers? An obvious place where rapid expansion and even more rapid price cutting would be very welcome is the undeveloped colour market.

And this seems about to happen. Star, a Japanese company noted mostly for not being as famous as Brother or Epson, has come up with the LC-10 colour dot matrix. *ACU* has the first review model in the country on the desk now, and it looks good.

Initial impressions are of a printer that has been designed just that little bit better than its competitors.

Firstly, it is smooth and streamlined. Now, a printer's Cd factor doesn't usually count one way or the other on review, but the streamlined Star looks more attractive than most. For some reason it is vaguely reminiscent of the VW Beetle.

Secondly, the printer cable connection is on the right-hand side of the case, well away from the paper path. Whoopee! Likewise, the power switch is on the front where it can be got at without groping and rending fanfold. And there is a good selection of indicator LEDs on the front panel to let you know what the machine thinks it's doing.

The front panel also has a peppering of mix-and-match pushbuttons. As well as the Online switch (brown) and the Paper Feed (pink), there's a Print Pitch button (light blue) which sets the size of the printed characters along with such things as condensed and proportional spacing. Lastly, there's the NLQ Type Style, a vivid yellow button that selects whether one of the three near-letter quality styles (Courier, Sanserif, Orator) or whether the fast-but-dotty type will be used.

Pressing any button results in a piercing beep; the printer might well have loud colours, but they're beaten by the bell.

Easy paper

More unusual design becomes apparent when the time comes to load in the paper for the first time. Where does the paper go? There are a number of promising slots, but nothing obvious.

After reading the book – a desperate measure – the clever hatch that hides the fanfold tractor is unclipped and the elegant Star design revealed. Either single-sheet or fanfold can be catered for at the flick of a lever, and during my tests the paper feed system ran without snarlups or the dreaded mid-list crumple.

It was also very happy about reversing the direction of the paper; this technique can be useful if you want to print a background to a line in one colour and then print over it in another. Altogether, one of the most reliable and easy to set up paper feed systems I've tried – once you've read the manual.

It did have a feature which wasn't very reliable. If you press the Print Pitch button followed by the Paper Feed button, the printer reverse-feeds the fanfold until it's clear of the platen (the rubber roller) and allows you to slip a single sheet of paper in. When that's been printed upon, moving the bail bar lever is supposed to reload the fanfold, thus allowing you to print a letter without having to unthread and rethread.

I found this worked only if the fanfold was well

positioned at the back, and if you always used the fanfold between plain sheets. A good idea, though some user experimentation is needed to make it work.

Another one of the first actions a new printer owner performs is the arcane Ritual of the Inky Finger, known to modern anthropologists as new ribbon installation.

The ribbon supplied with the review machine was of the coloured variety – some inch and a half thick, it has four bands of colour: Cyan, red, yellow and black. Again indicative of some advanced design, the ribbon snapped into place in seconds and not a smudge of colourful ink besmirched my fingers. Removing the thing was also simple and the standard boring beige of the printer case managed to survive in pristine condition.

Plugging the Star LC-10 in was unremarkable; an indication of cost-cutting was the permanently wired lead instead of a plug and socket arrangement common among higher-priced printers.

In ordinary monochromatic mode it behaves like any other Epson compatible NLQ printer. It's not fast; even in draft mode – charmingly referred to as draht in the front of the manual – it clocked up an uninteresting 100 characters per second. NLQ modes were down to 25-30 cps.

The NLQ styles are neither very good nor very bad – like the speed they are acceptable and pretty much par for the cheap printer market. See the picture and decide for yourself. There are also some gimmicky double and quadruple size characters.

Band on the run

But the big thing about the LC-10 is the colour. The ribbon, as mentioned, has the printer's three primary shades, and on paper the right mixture of red, yellow and cyan can reproduce any colour. (This is different from mixing light sources where red, green and blue are the three primaries; it can be a bit confusing deciding which colours will mix to what effect if you're used to screen techniques.)

The bed on which the printer ribbon rests moves up and down to place the right band between the print head and the paper. This can be quite alarming on first acquaintance as a previously well behaved mechanism rears its head (OK, its ribbon) and appears to try and break out of the hold, Captain.

This action has the effect of slowing down printing in some colours – where a line of NLQ characters in black would need two passes, the same in orange would need four, two for the red ink and two for the yellow.

However, this approach does mean that anything the printer can do in black, it can do in any other colour. All it has to do is twitch, switch ribbons, and continue as before. But how to make it switch colours?

There are no front panel controls to set the colour. And most word processors or text-producing programs know nothing about colour printers, let alone one as new as the Star LC-10.

But there is a way out.

If the Star receives two opening brackets ((and two closing brackets)), it treats any character it finds inbetween them as a command and any number directly following them as a parameter. For example, if you include ((C))3 in your document, then the LC-10 will not print it but will switch to a blue ribbon for the following text.

Other printer commands, like setting type styles, can also be included in this way, so that even the most basic of word processors can produce documents that make good use of the Star's capabilities. Doing a title in double-height and width just needs a ((S))3 in front of it. Odd, but you can't choose the quadruple-size text in this way.

There are two main problems with this approach. Firstly the word processor will treat the ((C)) as a word and try to format the text appropriately. Thus you lose any "what you see is what you get" unless you're careful. Secondly, you can't have ((C)) in your document if you want it to print ((C)) out! This isn't normally a hitch, unless you're writing a Star LC-10 review...

For those reasons, it would have been nice to be able to switch that feature off, but there were no commands or DIP switch settings to do this. The DIP switches, by the way, are easily accessible under the main cover, as is the large expanse of printed circuit board they are mounted on.

The Star LC-10's graphics performance was up to scratch too. It is Epson LX-800 compatible, and that's about the best 9-pin printer Epson has made, so most graphics packages and screen-dump programs will work, albeit in monochrome.

Colour graphics are a different story. The only colour option on many programs is the Epson JX-80. Using this on the Star resulted in an acceptable but somewhat liney output. However, there is enough information in the handbook to allow a competent Basic programmer to write a screen dump that uses colour.

If the LC-10 is as big a success as Star thinks it will be, it stands to become the FX-80 of the colour printer world. So new software should have drivers to cope with it.

The final quality of the output depends very much on the quality of the software driving it. Potentially the Star should be able to produce pictures up to the standard of, say, a cheap colour newspaper, but a program which doesn't take care to get the mix of colours exactly right, or doesn't overstrike to generate darker mixes, will produce a lacklustre output.

The verdict

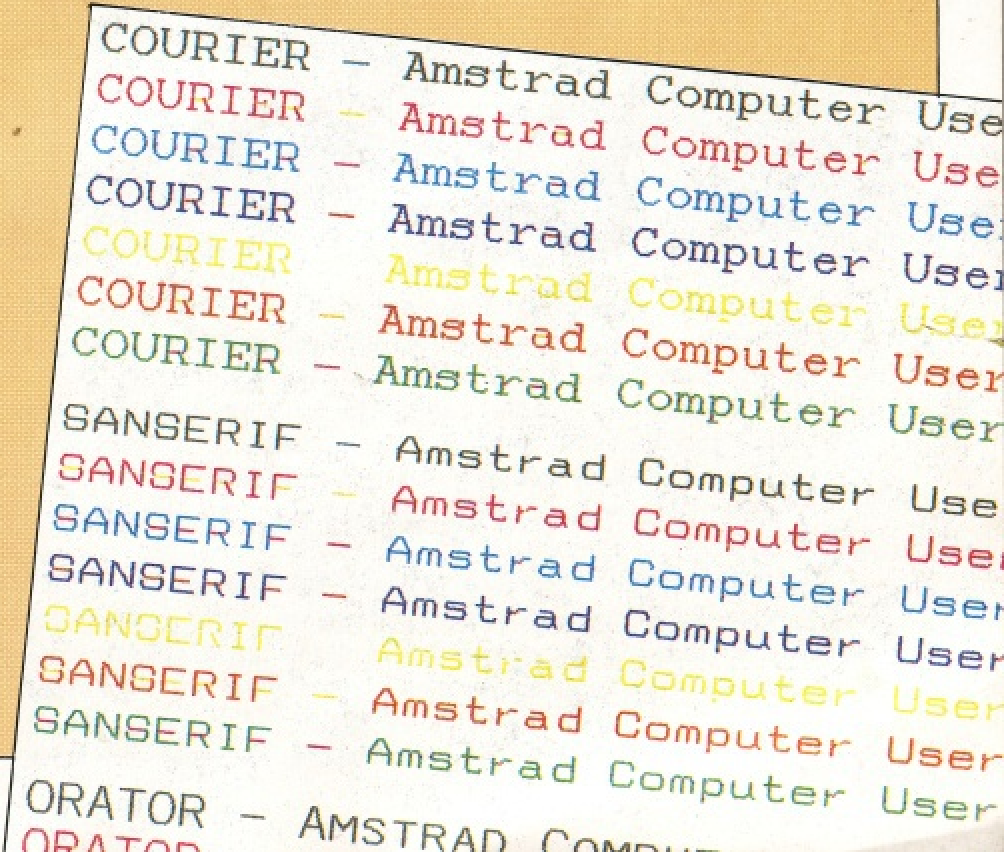
The handbook is OK. Largely free from inscrutabilities and logically laid out, it contains all the relevant information but not a lot on how to interpret it. However, a few comprehensive demonstration programs will help out the hackers, and the printer is really Epson-compatible enough for the rest of us to plug in and go.

Would I buy one? I think I would if I didn't already have a black-and-white dot matrix printer.

The Star LC-10 Colour is not expensive to run, and even cheaper if you buy the all-black ribbons for everyday use and keep a colour one for high days and holidays. And if you want to produce posters, notes or diagrams that stand out a bit from the rest, then the LC-10 must be the best way to do it without breaking the bank.

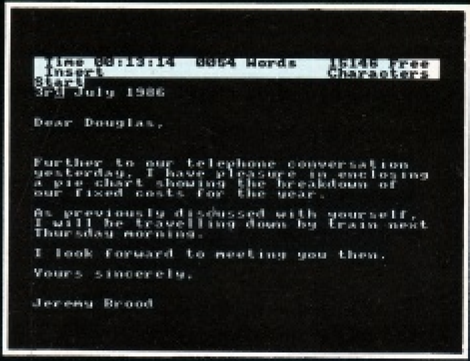
It will take a while before a lot of software can make the best use of this printer, so it will be most attractive initially to those with some programming prowess, but that software will come. It will come because the Star LC-10 Colour printer will be a roaring success.

Star Multifont LC-10 Colour printer
Price: £297.85
Star Micronics UK Ltd, Craven House, 40 Uxbridge Road, Ealing, London W5 2BS.

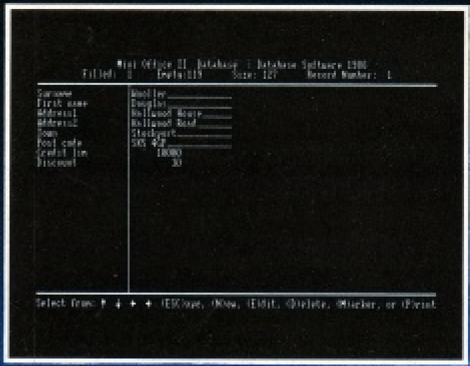


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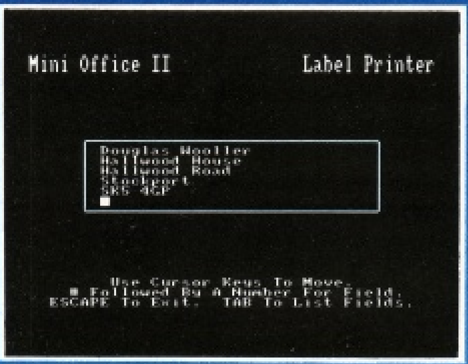
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...and at a price t

Mini Office II offers the most comprehensive, integrated suite of programs ever written for the Amstrad – making it the most useful productivity tool yet devised.

A team of leading software authors were brought together to devote a total of 26 man years of programming to the development of Mini Office II. What they have produced is a package that sets new standards in home and business software.

The sample screenshots above illustrate just a few of the very wide range of features, many of which are usually restricted to software costing hundreds of pounds. Most are accessed by using cursor keys to move up and down a list of options and pressing Enter to select.

Is it that easy to use? Several leading reviewers have already sung its praises on this very point.

Yet possibly the best advertisement for Mini Office II is that it comes from the same stable that produced the original Mini Office package back in 1984.

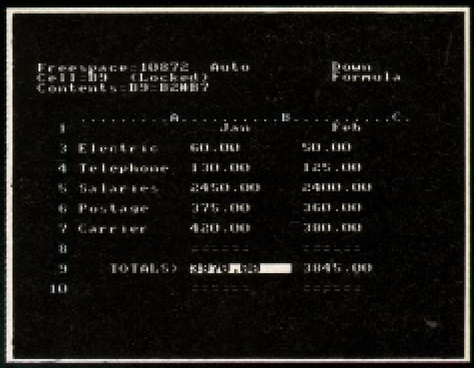
That was so successful it was shortlisted in two major categories of the British Microcomputing Awards – the Oscars of the industry – and sold in excess of 100,000 units!

It was up to Mini Office II to take over where the first Mini Office left off, with 32 extra features, two additional modules, a program to convert existing Mini Office files to Mini Office II format, and a 60 page, very easy to follow manual.

This is the package thousands of Amstrad owners have been waiting for – and at a price everyone can afford!

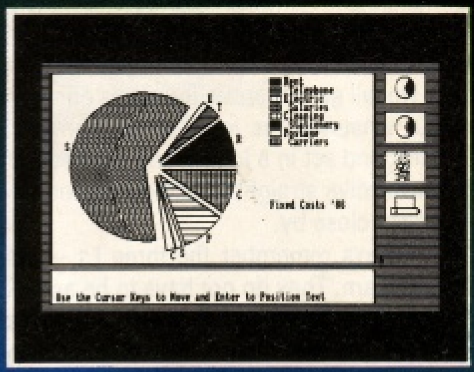
t ONE package!





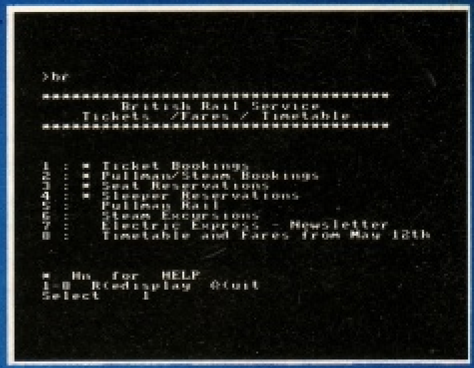
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Seek and ye shall find

Judging by the mail I get about solving adventures, it is obvious that although many of you are hardened fanatics, there are also a number still struggling through the early stages of learning. There are some fairly simple rules that will help the novice, but nothing will help as much as playing a game that appeals to you.

If you find an adventure that really grabs you and you can solve it, however slowly, you will probably be hooked for life. As I have said many times in the past, solving adventure games is very much like solving a crossword puzzle. You are given the clues that will enable you to complete a series of puzzles, some of which interlink and will eventually lead you to that final solution.

Adventures are written to be solved. However difficult they may seem at the time, there should be sufficient clues buried in there somewhere for you to win through to the end. You must pit your mind against that of the programmer to work out what actions are needed, together with where and when they should be performed.

Not all games are as logical as one might wish, but whatever the logic of the game you must think and act in a logical and consistent manner. Never dive straight in without paper, pencil and eraser close by.

Always remember the three Ls – look, listen and learn. They do not have to be applied in any specific order but every now and then, especially if you are stuck, ask yourself: Have I looked at everything possible, have I listened to all that I have been told and have I learned everything possible?

Look

Looking at everything does not just mean using the LOOK command to check out your present location. It means EXAMINEing everything mentioned in the game. Obviously in an adventure with a great deal of text, this could be a lengthy and potentially boring process. You must use some judgement about what you examine. Nevertheless, it is one of the adventurer's most important weapons, and screeds of text can sometimes be used to lull you into false assumptions. Repetitive text as you walk through a forest could well disguise the fact that a tree at one location is of special interest.

Examining things twice may yield something, too. Find an old coat and at the first attempt you may find a key, a second look may reveal something tucked into the lining.

Good observation also implies good mapping. If you draw careful maps of where you have been you might find an inexplicable hole in the middle of a number of locations. Perhaps you have found a hidden location, you may not yet know how to get there, but the possibility should be noted.

Listen

Listening does not only mean taking note of what any characters you meet have to say. It means a careful study of any written material that may come with the game, and an even more careful assessment of what you are told on screen as you move around. There will always be clues to be gleaned in the text and from examining things, but there may also be potential clues to be found indirectly by simply listing objects seen on your travels.

I always note down twice any items found – once in the box representing that location on my map and secondly as a list alongside the map. In some adventures this list can get pretty big and, of course, there could be a number of red herrings. Reading through this list from time to time, you may spot a link between certain objects.

Scattered among a list of some 40 items may be a bow, a stick and a feather. Examining the stick may reveal that it is thin and straight, perhaps you could make an arrow to use with that bow.

Study carefully what you are told and if something looks as though it could be picked up, always EXAMINE it both before and after you have picked it up.

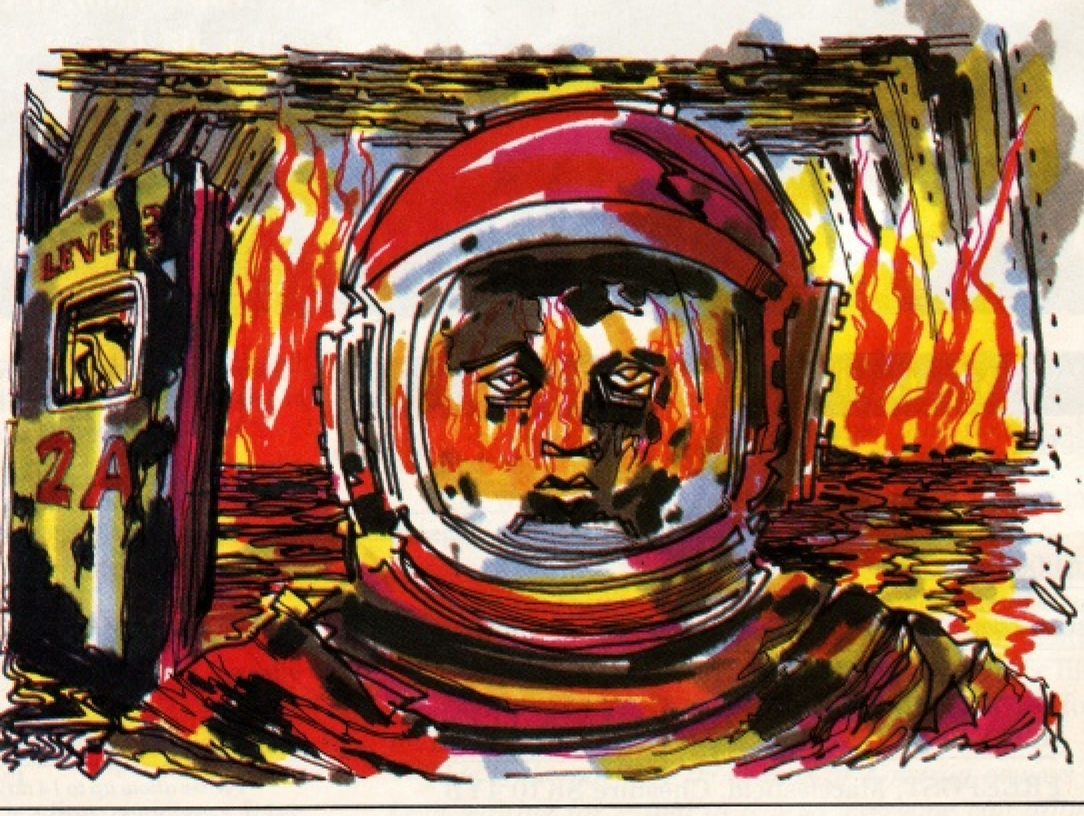
Keep an open mind about what you find, and beware of obvious uses. Nine times out of ten a magic bean will need to be planted (and watered?) to enable you to climb to another location. The tenth time, a second EXAMINE may reveal that it is a magic jumping bean. Perhaps it will always jump north when rolled and could prove to be a useful compass when you are lost.

Learn

Taking any action could be right or it could be wrong, learning by your mistakes is often the only way forward. In some games there may be a penalty for these mistakes, either there is a time factor, or initiating the wrong action inhibits another action that is required later.

SAVEing your game position to tape or disc is an accepted stratagem and should be something you do regularly. This will allow you to explore a new section thoroughly or to try potentially dangerous actions. Then reload a previous position knowing what to do and where to go with the least time loss or risk of catastrophic failure.

One of the main ideas behind adventure games



is that of freedom of movement and action. Some games limit this freedom, but within their strictures there are still opportunities to try a range of actions. Only by attempting something will you learn what are the right actions; look for the clues to help you find them.

Learning also applies to the general types of solution. Some games are heavily weighted with puzzles that require you to bring the right object to the right place. Others need more mental agility like my magic jumping bean. Learning which type of puzzle to expect will help you understand what the programmer is most likely to have in store for you.

Mazes must be fully mapped. Until this is done you will not know what might be hidden in them. First check to see if the descriptions are all exactly the same, then try examining whatever is mentioned at each location. "Lost in a forest of trees" might reveal a different type of tree in each location.

The old system of dropping something at each location in a maze still works in most cases. Often not enough objects are available for every location, so either go out of the maze for more or thoroughly map a section before moving on to another, using the same objects all over again. This latter method has its dangers, but will work if you are careful and methodical.

I hope this brief training course will help some of you. Just remember that adventures are actually designed to be solved – you just have to find the right way to do it.



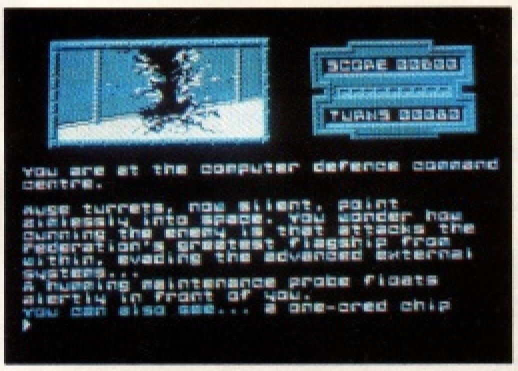
Watch this space

Not everyone likes adventures set in the fantasy worlds of dungeons, trolls and lands of magic. CRL's latest space fiction adventure, Federation, should partially satisfy this need.

I say partially, because if you substitute robots for trolls, gleaming metal corridors for twisty rocky passages and magnetic data cards for magic rings, you end up with what may be considered a classic adventure scenario.

But whichever way you look at Federation, it provides a good run-of-the-mill game. It has plenty of puzzles and although the hi-tech sounding names for some of the objects may throw you at first, examining them will usually explain what they are and sometimes give a clue to their uses.

You play the part of a Federation agent who has the unenviable task of hunting down a treacherous alien scientist who has hijacked the Federation's latest and most powerful spaceship. It was to be the flagship of the Federation fleet, but its designer, Erra Quann, has taken it to an outpost of the evil Empire to sell the secret of its engines.



The story opens with your space hopper, Crimson Cloud, badly damaged but almost docked to flagship Quann Tulla. Air is leaking out of your hopper at an alarming rate and your first task is to find some means of staying alive.

Having solved this fairly simple problem, you must board the Quann Tulla to continue your mission. After a brief walk down the unconnected docking tube and ending up floating in space, you realise that (a) the program restarts very quickly, and (b) that although there has been a severe failure of most on-board systems, pressing the right buttons in your hopper's cockpit will save your bacon. Pressing the wrong button gives the opposite effect – fried bacon.

When you at last get aboard the Quann Tulla you will be faced with numerous minor problems, the solution of each taking you one step nearer to your objective. There are a good number of objects to find and manipulate but there is not a great deal of descriptive text and the graphics are fairly rudimentary.

Reasonably complex commands may be given, but generally a verb and noun input is all that is needed. Only one command may be issued at a time, but the speed of response and screen display updating is quite fast so there is little loss of continuity.

The redesigned typeface is not always too easy to read and the programming is somewhat sloppy. On occasions words are split from line to line and certain responses are given even although they should only be provided at specific places.

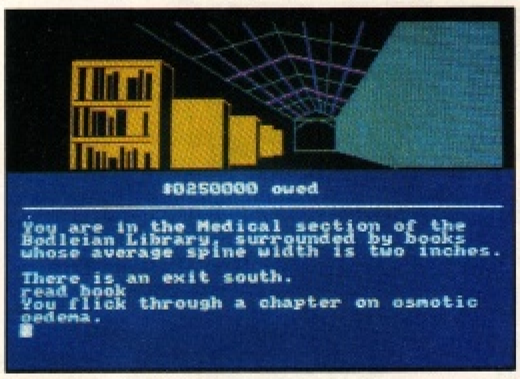
For all these petty irritations Federation, is fun to play and should be a good game for the novice. Just remember to SAVE at regular intervals, as death is often just around the corner.

A shot in the dark

I am a great fan of Jeffrey Archer and having got the Amstrad CPC version of Not A Penny More, Not A Penny Less, I was really looking forward to playing the game. Sadly I have found it one of the most frustrating I have ever played on the Amstrad.

The computer game follows the general plot of the novel. A young American academic working at Oxford University finds he has been swindled out of $250,000. He then finds three other people who have suffered the same fate. One man, Harvey Metcalfe, was responsible for the financial disaster that affected all of them. The four men decide to put together an elaborate scheme to regain their lost money – not a penny more, not a penny less.

You play the American, Stephen Bradley. The game starts in his room at Magdalen College Oxford, with Stephen looking at a folder that will eventually contain information on the other three



'Researching the man'



'Researching the operation'

who have been swindled, together with what he can find out about Harvey. Each time you learn a relevant fact, it will be recorded in the dossiers in the folder.

The folder also contains some useful telephone numbers, which I had the very devil of a job trying to read. The instructions do warn you that, like a book, you will be guided through the plot, with no real freedom of action. You must solve the present puzzle before you can move on to the next. Certain actions will be accepted at one point but not at another.

Having looked around the room, I tried to examine the telephone numbers. No luck. I tried reading them. Again no joy. I spent a good half hour trying to get those numbers, as I knew it was possible. Eventually I quit the game and started again. This time I tried for the numbers as soon as I started. Bingo, three valuable telephone numbers!

What makes the situation somewhat worse is that you must type the word in full - no shortened forms are accepted. Even movement requires GO NORTHEAST in full.

So what stopped me getting those numbers the first time round? Was it just a mini bug, or did I do something in the wrong order? Whatever the answer, it does not give me a sense of well being. What other crucial information can be mislaid in the same fashion?

I have managed to get to other locations, but that feeling of uncertainty is never far away and it has quite spoiled what I had expected to be a great game.

The graphics are simple, but take a long time to draw. There are some reasonable puzzles but it is not always possible to be sure what you have done or what you have got.

There does not appear to be any form of inventory and if you open the cupboards in Stephen's room there is no apparent way of checking the contents again unless you close and re-open them. Then you find the same objects are there, even though you picked up one of them the first time round.

The plot is, as you would expect, very clever, but the implementation of the game is one of the most confused and frustrating I have ever come across. Although I have only spent a few hours on it, I would still like to get further, but I think I shall start running up the walls before I reach the end.

Ratings

	Federation	Not A Penny More
Plot	65	72
Atmosphere	62	60
Addiction	68	58
Frustration	–	80
Difficulty	60	90
Overall	65	65

TO ORDER PLEASE USE THE FORM ON PAGE 65

MUG THE INDEPENDENT MicroLink User Group NEWSLETTER

ExpertLink update

AS part of an intensive effort to inform the Great British public, and the business community in particular, about the coming of the single European market in 1992, the Department of Trade and Industry has been making adverts with such worthies as Alan Sugar telling us what a good thing it all is. You can't really have missed them.

Expertlink, the service mentioned in the last MicroLink Users Group newsletter, has responded quite admirably by forming the ExpertLink Exporter's Club (EEC – oh, very good).

If you missed it, ExpertLink is a service for businesses which brings together interested MicroLink subscribers and a team at the University College of Swansea to discuss and solve business problems.

The EEC is a slightly more specialist subsection, and exists to disseminate information about the rapidly changing regulations and complexities that (until 1992) dog exporters.

There's an occasional bulletin on the ExpertLink board, and Dr Jim Milton – a member of the Applied Language Studies unit at the university who's co-ordinating the EEC – is building up a database of MicroLink subscribers who export, what they export and where they export it to.

Already there has been a cross-fertilisation of interests.

An exporter of electronic equipment to Malta and Portugal has registered, and a language expert company has identified Italian contacts for the equipment. Whether anything comes of this remains to be seen, but in business the first contact is often the most difficult to be made.

MUG wishes the EEC the best of luck. It's an imaginative use of electronic mail in the spirit of the ExpertLink bulletin board as a whole, and deserves to succeed.

Mortgage Desk

APOLOGIES if this month's newsletter seems like a long list of MicroLink services, but this is an area where there has been a lot of activity recently. Mortgage Desk isn't something you're likely to need more than once, but that once could be very important. Run by a mortgage broker, it pulls together the information from around 150 different lenders.

People who want a mortgage, or are thinking of remortgaging their house, or who are looking for money towards a company, or who need conveyancing done, just have to fill in a form online and the matching of lenders is done automatically.

Of course, there's no guarantee that they can find you the best deal. But it's a very painless way of finding out!

MUG power...

IT took a while, but eventually we came up with it – the definitive list of computers worldwide on the Telecom Gold/Dialcom system. It turns out that there are more than 100 computers in tens of countries, and each one of them can be sent messages from the MicroLink computer.

So what now? There's been some discussion on this on the MicroLink bulletin board, and there's a number of people who would like to make international contact with other users. So, now we have the list, it's just a question of finding out who's on the other ends and trying to set up an international list of would-be contacts.

Never a dull moment...

...on the bulletin board. Well, that's not true. In fact, sometimes the dull moments stretch into pretty tedious hours.

But nobody's scared to get on and complain, and the accusation that things have got boring usually results in a heated argument as to who it is that's the most boring and things get flowing again.

A few interesting observations get made. For example, why do so many TV companies join MicroLink? William Gallagher, active MicroLink user, has spotted a good number of TV and production companies.

Among such notables as Yorkshire, Granada and the BBC he has managed to pick out some exotica like TV Ontario.

Also in the media business, and even more exotic, is an Andean shortwave radio station called HCJB. For a service aimed at the British small business and computer user, MicroLink isn't doing too badly...

Finally, an extra service from MUG itself.

There's a small but growing collection of handbooks and software on hand at MUG HQ, some donated by manufacturers such as Dataphone and Database Publications, which are used if any MUGgers have a problem they are not able to solve.

Together with the expertise of the MicroLink subscribers themselves, there are few communication problems that resist for long. So – just ask!

All the (computer) news that's fit to print

THAT used to be the watchword of the British Press. A service that still follows this sentiment, has been going for some time on MicroLink and has recently been greatly expanded, is Newsbytes.

Published on a Sunday afternoon, it brings together the week's events from three regions in the USA and four in the rest of the world, and it – like most other MicroLink services – is free to subscribers.

Newsbytes covers all the goings-on in the micro world. And as it has details directly from editors in the USA, it often scoops the printed press by several days, as well as providing interesting snippets that never make it to the national computer press.

The UK section is written by MicroLink user and journalist Steve Gold (MAG066). He collects the international edition, and posts it up on to the MicroLink system, and also acts as the channel to the International editor in America.

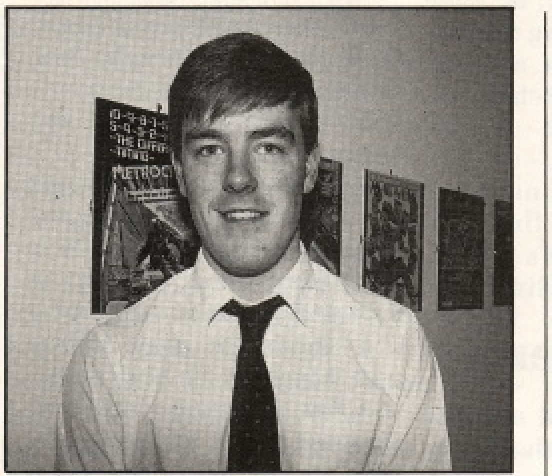
That's one of the more interesting aspects of electronic news – within seconds of reading a story you can be sending a letter to the writer asking for more information or just making a comment.

This week – to whet the appetite – there was indepth coverage of the latest computers from IBM just three days after the launch. And there was a new excuse from a famous software company about the non-appearance of its product. It's not late, you see; they've just "extended the product appearance window".

Suggestions of material for inclusion in the MUG Newsletter should be sent to Rupert Goodwins on MAG95816

Probing into Probe

Jerry Muir tells the story of a company that escaped from Alcatraz to play games in Rome



PROBE is something of a paradox. The company currently has 72 people working on various products, and yet it's still a two-man organisation. It brings programmers and projects together, but it's not an agency. And apart from a few titles in the early days, Probe has never published anything, but its name is probably as well known as the labels on which it appears.

Another paradox: Despite all the accolades, this is the first time that Fergus McGovern, one of the two directors, has been interviewed. Perhaps this will help clear up the mystery of what Probe is, and how it works. But first I get a tour of the offices, two floors of bright, modern rooms in an award-winning block in Croydon, South London.

There are work benches with computers around the walls and a coin-op machine stands endlessly cycling through a demo of 1943. But where is everyone? Apart from one solitary figure cracking away at code it's rather like the Marie Celeste. And yet Fergus tells me that they are just about to move into new premises 100 yards away because they are running out of space. I really do feel that it is time to get down to business, and start talking.

Roots

Unlike many people in the software industry, Fergus didn't come from a programming background. In fact, his first brush with micros was as a 16-year-old on a summer job with distributors P&P Micros.

"I was their third ever employee and watched a small company turn into a very large, limited company. They were distributors for Apple, and they are now a dealer for IBM and Apple – they are huge. They gave me the use of a £5,000 IBM system and an Apple II system on a toy basis, doing anything and everything".

Soon after that Fergus won a scholarship in accountancy, though he still retained close involvement with P&P. It was while he was training that he had the idea of launching a games label, and along with his partner, Vakis Paraskeva, he formed Probe.

"Nowadays I'm technically minded, but back then I was more into marketing", he recalls. "It was more of a hobby. I didn't just go to work in the morning – I controlled my own destiny.

"We started off as publishers, distributing and marketing, doing the whole job".

The first release – Alcatraz, a budget title – was treated as an experiment. Its sales highlighted what Fergus and Vakis believed to be the next area for exploitation, Commodore's C16 and Plus 4. Defence 16, a Defender clone, followed and they were delighted when Smiths agreed to stock it – they had only sold to independent outlets before.

Developments

However it became obvious that the C16 was not going to be a huge success. Probe looked to the Amstrad.

"Virgin had just put out Sorcery, and we did Devils Crown. It was particularly well received by *Amstrad Computer User*, with a double page photo map". He smiles proudly, "It was even taken up by Harrods".

Sure enough, there is a cover with a Harrods price sticker in his cuttings book.

At this stage everything from packaging to marketing was still done by Fergus and Vakis, and it was turning into a 24 hours a day job. But it had its rewards; Devil's Crown sold in very large quantities, particularly in Europe. Probe's next licence brought in TV madman Russ Abbot for The Adventures of Basildon Bond. They even tried another C16 game, Dirty Den, though despite the teasing EastEnders connotations of the title, it wasn't actually a tie-in.

Fergus was in a position that every businessman dreams of. "Cash flow was good, all monies were generated ourselves. We were making enough profits for the purchase of our next licence and were being approached by programmers looking for work. But we weren't able to fund original games as we didn't have a sales team, just the two directors".

So they took the momentous decision to become a software development house, concentrating their efforts on programming rather than marketing. Long discussions with the bosses of publishing companies followed and eventually Fergus and Vakis felt they could safely free Probe from the day to day duties of getting products into the shops.

"We approached software houses and explained how we wanted to operate, what services we could give them – and they put their faith into co-operation with Probe".

Probe also took this opportunity to license Devil's Crown, and the rest of their back catalogue, on to budget labels or Computer Hits compilations, giving a new, profitable lease of life to titles which had already sold well at full price.

Conversions

Pretty soon the transformation was complete and Probe was getting a good name for its coin-op conversions. For these they drew upon the wealth of British programming talent that preferred not to tie itself to one company.

"We found that if you treated someone well and paid well you'd be offering a financial and company package that nobody else could offer. We were able to attract more programmers, then keep them when they arrived. We soon had programmers who could do conversions to a high standard".

The results of this method of working are impressive. They include games such as Xevious, Metrocross, Slapfight, Arkanoid, Solomon's Key and many more for virtually every major company including Ocean, US Gold, Activision, Mirrorsoft, Psygnosis, Epyx plus budget leaders Mastertronic and Firebird.

Fergus smiles as he recalls: "We'd transformed into coin-op specialist and the nice thing about it was that we were being offered so many games we were able to pick and choose for programmers to get products that would show them in the highest esteem.

"We tried to forge good working practices and relationships with the companies".

This meant that not only could they depend on Probe, but they could also use the company name to market products.

"We have prestige London-based offices and, subject to software house approval, journalists can come in and see a game in development. We're not just doing conversions but provide a complete service to the software house and give programmers a chance to do work they might not find for themselves".

Rewards

But where, I wondered, are all these programmers?

"They used to work in-house, but the way we structured ourselves we weren't able to get the best out of them on a nine-to-five basis. So we set up little internal development houses within Probe. We'd structure any programmers who wanted to cooperate into groups with self-contained offices of their own, and even living conditions".

They were still controlled by the Probe man-

agement though, overcoming the danger of programmers' ego trips?

"If you have two programmers, an artist and a musician living together in one house, you can control them more efficiently than if they are in their own back bedrooms. Now our offices are large enough to cope with them, so that when they get to the end of a project they can work under supervision".

Probe now rents four-bedroom houses around the country, and will even buy them if they'll be needed for a while. They can then offer the programmers a complete package.

"They know that the rent is paid", says Fergus, "and that the heating won't get turned off, so they can concentrate on the work in hand".

The advantage of this method of working is brought home when Fergus remembers the experience of developing Outrun, just one of the 150 formats developed last year.

"It was our worst game in terms of the amount of energy and resources expended and the time it took personally. It actually changed the course of how we wrote games. I was taking three or four plane trips a day to control development. One day I flew all over England to get it out on time".

But all that hard work had its rewards.

"The ST version is probably the best game we've written. It is going to live up to what people want. It is going to do well money-wise and it is going to lead into a good game for the 16-bit market".

Originals

All this talk of the coming generation of computers makes me ask Fergus what he considers the future to be for the Amstrad CPC market? He believes: "It will be dominated by companies that know the machine back to front and are able to have good ideas and produce innovative games; the companies that are willing to invest in the livelihood of Amstrad computers".

Which leads neatly on to Probe's next product. Having proved themselves in coin-ops, they are now working on originals as well. While most must remain secret owing to confidentiality agreements, there is one project that Fergus can talk about because it is being developed internally.

"It is probably one of the best games that will ever hit an Amstrad. We are doing it without a commission. I wondered: 'What if I gave programmers unlimited time, unlimited money, and put them together to produce the best possible game. What sort of game would we get?' "

Fergus firmly believes that this game will dominate the Amstrad market for a long time.

"We will storyboard it", he says. "We'll put our money where our mouth is and develop half the game before we show it. Then we'll select the publisher that we think the product is right for, the one who can do the best job for us".

He's loath to say much more.

"It's graphically stunning, addictive, has perfect gameplay, and it is not one but five games. Each load is a game in itself, each individual section is different but complements the previous one, so you will feel you are playing a continuation".

If it does live up to its early promise – and there is every indication that it will – it will be because Fergus and Vakis have carefully observed the market and taken an innovative approach. They've provided a buffer between the commercial demands of publishers and the idiosyncracies of programmers to produce the best software in the most efficient fashion.

The project – and it could be one of the most important projects in CPC history – has been provisionally named The Roman Games.

Eventually Fergus takes me up to another room and loads a disc into a 6128. What I see is . . . well, it is everything he promised and more, but that's all I can say because he swore me to secrecy.

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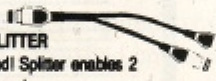
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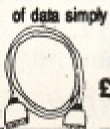
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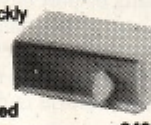


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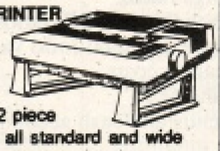
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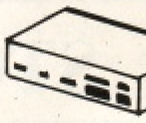


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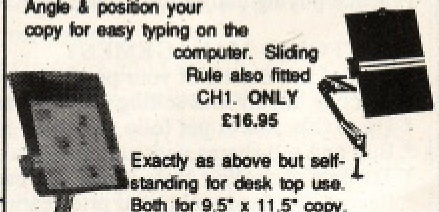
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BASIC tutor



Over and over again

Jeff Walker wends his way through a few simple loops for novices

IT'S not difficult to get yourself in a mess with loops. The basic concept – that of stepping through a series of instructions a given number of times – is fairly easy for the novice Basic programmer to grasp, but to be really au fait with FOR ... NEXT and WHILE ... WEND a little insight into how they actually work is needed.

Let's dive straight in and start with the very simple FOR ... NEXT loop in Listing I. The variable, *counter*, in line 10 is the "control" variable. It is this that Arnold keeps a check on to make sure the loop is executed the correct number of times. After the equals sign comes the start value to the end value, followed by the step size. These values dictate how many times the loop will execute. If the STEP part of the command is left out, the stepsize defaults to 1.

When Arnold hits line 10 it immediately gives *counter* the value of 1 – the start value. It also makes a note that *counter* should be incremented by 1 each time around the loop (the stepsize), and that the loop should terminate if *counter* becomes greater than 3 (the end value).

Arnold then passes on to the next line, the first instruction in the loop, which in this case is just a simple PRINT statement.

Line 30 is where things get interesting. The NEXT keyword tells Arnold to increment the value of the control variable by the stepsize and check that that value has not exceeded the end value of the loop.

If *counter* is still not greater than the end value, Arnold goes back to line 20, the first statement following the FOR command.

If the value of *counter* does exceed the end value, Arnold exits the loop and passes on to the first statement following the NEXT command, which in our example prints out the final value of *counter*.

Type in and run Listing I. The word "Hello" is printed three times, followed by the current value

```
10 FOR counter=1 TO 3 STEP 1
20 PRINT "Hello";counter
30 NEXT counter
40 PRINT "Counter =";counter
```

Listing I

of *counter*, and then the final value of *counter* is displayed. Notice that it is 4, one more than the end value stipulated in the FOR command.

Now change the stepsize in line 10 – the number after STEP – from 1 to 2. Before running the program again, try to predict the outcome. How many times will Hello be printed, what will be the value or values printed, and what will be the final value of *counter?*

IF your predictions were wrong THEN go back to the start of this article ELSE carry on.

```
10 FOR loop=1 to 100
20 'do this
30 'do that
40 IF xxx=yyy THEN 80
50 'more of this
60 'more of that
70 NEXT
80 'continuation
90 'of the pro-
gram . . .
```

Figure Ia

Getting out of loops

It is not good programming practice to exit FOR ... NEXT loops early. But if needs be, there is a right way and a wrong way to do it, as illustrated in Figures Ia and Ib.

In Figure Ia we have checked for a condition in line 40, and if that condition is found to be true we jump straight past the loop's NEXT command with a GOTO. Now this will work, and many novices programmers – plus some experts – fill their masterpieces with such code, but it is the

wrong way to do it.

Apart from being extremely unelegant, eventually Arnold will get tired of you ignoring its nice NEXT keyword and will promptly stick up an

```
10 FOR loop=1 to 100
20 'do this
30 'do that
40 IF xxx=yyy THEN loop=100:GOTO 70
50 'more of this
60 'more of that
70 NEXT
80 'continuation
90 'of the program . . .
```

Figure Ib

error message and refuse to further comply with your wishes. And although Arnold is very patient, it is unwise to upset it more than is necessary.

The correct way to exit a loop early is shown in Figure Ib. Here, if the condition in line 40 is found to be true, we set the control variable to be equal to the end value of the loop. Then, when Arnold reaches the NEXT, the control variable gets incremented by one, becomes greater than the stipulated end value, and the loop is exited normally.

Remember, however, that the *more of this* and *more of that* lines will still execute as the control variable is not checked until the NEXT command is reached. If it is important that these lines do not execute, then a GOTO 70 – line 70 being the line that NEXT is sitting on – will need to be tagged on to the end of line 40.

While we're at it

The truth is, if you think it may be possible that you will want to exit a loop early then FOR ... NEXT is not really the structure you should be using – sophisticated people use WHILE ... WEND.

The WHILE equivalent of Figure Ib is shown in Figure Ic. Notice that this kind of loop has no automatic control variable, so you have to set

```
10 loop=0
20 WHILE (loop<101)AND (xxx<>yyy)
30 loop=loop+1
40 'do this
50 'do that
60 'etc
70 WEND
```

one up (line 10) and increment it yourself (line 30).

The condition that is being checked for – *xxx* against *yyy* – has now become part of the WHILE command. Now it is awfully tempting to put *OR (xxx<>yyy)* because that seems to read more correctly.

But regular readers of Basic Tutor, of course, will know that the expression following WHILE needs to evaluate to TRUE for the loop to execute. And since *(loop<101)* will always be TRUE while the value of *loop* is below 101, if *(xxx<>yyy)* became FALSE, the expression would read WHILE (TRUE OR FALSE) which still evaluates to WHILE TRUE, so the loop would continue when we want it to stop.

However, by using AND in the expression it ends up as WHILE (TRUE AND FALSE) which evaluates to WHILE FALSE, so the loop terminates as planned.

The trouble with WHILE ... WEND is that this TRUE or FALSE state is not checked for until the WEND, which means that if *(xxx<>yyy)* becomes FALSE halfway through the loop, the remaining instructions in the loop will have to be executed before the it can terminate. The way to beat this is to have a line like:

```
25 IF xxx=yyy THEN 70
```

This statement would go straight after the WHILE command and would direct Arnold at the line WEND is sitting on. Of course, really sophisticated programmers would use flags and two or three nested WHILE ... WEND loops to get rid of all IF..THEN..GOTO statements, but that's another, longer, story. Remind me to tell you it some time. Tarra.

Applications advice



David Foster gets to grips with yet another mixed bag of problems

I HAVE received one or two letters from people apologising for their queries not being either to do with Protext or printers. Don't apologise – the column is meant to help out with any problems with software of a non-games type. So please continue to keep passing on your problems.

Mastercalc and DR Graph

I've had a letter from Dr T.Pocock who enclosed a couple of Basic routines that enable Mastercalc data to be exported to DR Graph using DIF file format, and also to import DIF format data into Mastercalc. One is quite short and only exports data, but the other permits both import and export. Unfortunately they are too long for publication in this column, but if you send me an sae care of *ACU* I will see that copies of the routines are returned.

Dr Pocock also has a couple of queries which I am afraid I cannot answer. Firstly, is there a high resolution GSX driver available for the CPC that will work with the standard CPC 7 bit printer port? (The supplied driver only works with 8 bit ports). Secondly, does anyone know of a way to save the DR Graph screen display in a form that may be used with Stop Press? Any help would be appreciated.

Two printers, one computer

W. Buller of Hornchurch has two printers that he uses with his computer and is a bit concerned about having to keep changing the printer leads each time he wants to use the other machine. He wants to know whether there is any way to have both printers connected at the same time.

He also comments that on occasions the computer crashes while changing the leads over.

First of all, a warning. Never ever unplug and re-connect parallel printer cables while the computer is switched on. It is quite possible to cause damage to the computer, the printer, or both, by doing so. You may get away with it, but I know I wouldn't risk it.

In answer to Mr Buller's main question, it is possible to have both printers connected at the same time by connecting them through a switchbox. These are available from a number of suppliers at prices varying from about £25 for the cheapest up to several hundred pounds for the most sophisticated.

For virtually all normal use the cheaper, mechanically switched ones are perfectly satisfactory. I have used one for a couple of years now, with no problems. Kador (0685 883663) and RSD Connections (0920 5285) are two companies that market switchboxes at the cheaper end of the price range and in various types.

And now, it's...

Printers again. Yes, I have received a number of letters from people complaining that certain programs will not work with their printer and protesting that the software and the advertising should clearly state which printers will and will not work with the program. In virtually all cases the printer being used is a relatively unheard of make or an old or obsolete model.

I have to say that I do not think that their suggestion for adverts is a practical proposition for a number of reasons. There are several hundred different makes and models of printer available and it would clearly be impractical for any software company to test its software with every printer. Secondly, if you do have an unusual make of printer, the onus must really be on you at the time of purchase to make sure that the software will work with your set up.

Light pen problems

I. Dempster of Birmingham recently bought a second hand Amstrad LP1 light pen and now finds that it was designed for use with the Amstrad DMP1 printer, not the DMP2000 that he has. He wants to know what modifications are required to enable him to produce screen dumps from the printer, rather than the garbage he gets at present.

I dare say that someone will prove me wrong, but I would venture to say that it was not a practical proposition to modify the code of the program to produce a working screen dump on the DMP2000. The DMP1 used non-standard printer control codes, which is what causes the problem.

My only suggestion is that he obtains a separate screen dump program which can be used to dump previously saved screens instead of using the LP1's built-in screen dump routine. A very good machine code screen dump was published in the January 1986 issue of *ACU*.

Tape to disc

One of several similar enquiries comes from W.George of Swansea who has a few games on tape and finds them very tedious to load, particularly when the disc drive is sitting idle. He wants to know whether it is possible to save these pro-

grams on to disc once they have been loaded from tape.

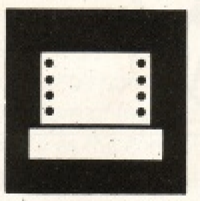
The simple answer, in most cases, is no. Many programs are supplied protected in order to stop this thing being done.

Having said that, there are a number of programs and pieces of hardware regularly advertised which are capable of transferring many programs from tape to disc. Everyone should be aware of the fact that the law is vague on the legality of copying or backing up software, even if you legally purchased the original.

One thing that is absolutely certain is that copying a program that belongs to someone else, without their permission, is illegal and amounts to nothing short of theft.

Even when you have bought a program on tape, it may be illegal to copy it on to disc, even for your own use, so be warned. Many companies offer an upgrade service from tape to disc at a relatively small charge.

Who and what?



J. Mitchel of London NW11 has a peculiar problem with his Serial 8156 printer which I must admit has me equally baffled. Like Mr Mitchel, I have been unable to find either the manufacturer or importer of the printer and suspect that it is no longer produced.

I don't know this particular printer, but vaguely recollect that it was being sold by Dixons as part of a package at one time.

It appears to work perfectly when Mr Mitchel uses it with the Mini Office II word processor, but when he tries to use it to print from his own programs or from the keyboard, it prints rows of backwards question marks until such time as the command PRINT#8 is issued, after which nothing else happens. If it wasn't for the fact that the printer works with Mini Office II, I would suggest that it was a printer problem.

Does the problem only occur when the printer is switched on after the computer, or does it always happen? If it only happens when the printer is switched on after, I would suspect that there is a slight problem with the printer cable or the connections and that something is causing a signal to be sent to the printer that is confusing it.

Does anyone else have this model of printer and have they had the same trouble?

Five and a quarter drives



W. Davies of Plymouth noticed a comment I made in a message reproduced in the Cage Page about using 5.25in drives on the CPC.

Mr Davies has a number of drives that were used with a Tandy TRS-80 and he wants to know whether he can connect one of them to his 6128. He assures me that the Micropolis 1022 drives are fully Shugart-compatible, in which case the answer is almost certainly yes.

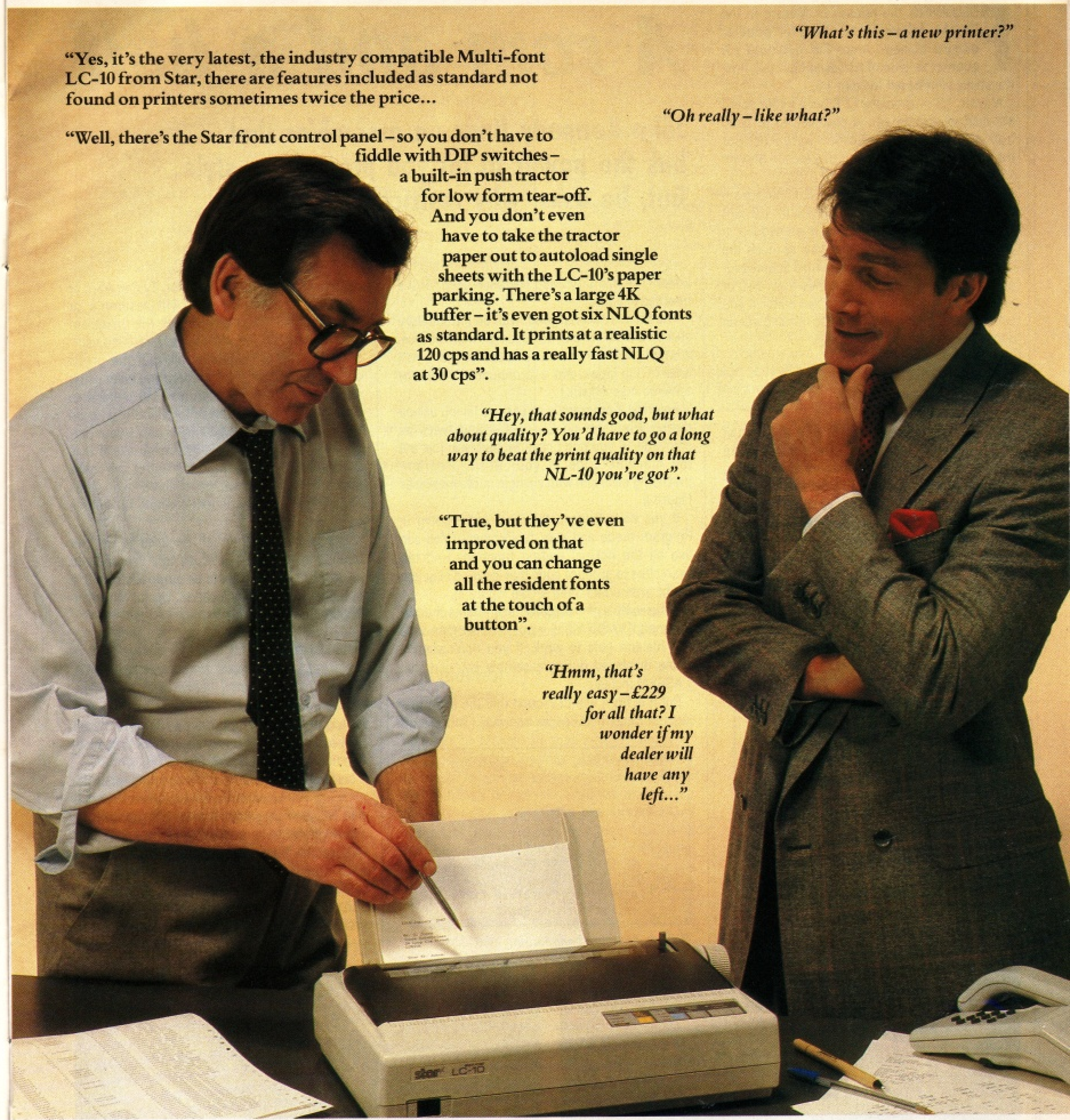
The second drive edge connector on the 6128 is pin-compatible with the standard edge connector used by most Shugart type disc drives, so all that is required is a ribbon cable with an edge connector at each end. The only thing that is slightly unusual is that the connector on the 6128 is inverted, so the cable must be connected the wrong way up, or to be precise, the opposite way up to the way you would expect.

Three further points should be noted. With some makes of 5.25in drive the second drive will only be recognised by the computer if the drive contains a disc at the time the computer is switched on. Without the disc in place and the gate closed, Amsdos cannot detect that the drive is present.

Secondly, you must make sure that the drive is set up to be the second drive. This either requires you to change the setting of a dip switch on the drive, or to move a small clip connector from one set of pins to another. Some drives number the pins from 0, while others from 1, but in either case, it wants to be the second drive that is selected.

Thirdly, you experiment at your own risk!

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A rom and a half

John Kennedy finds an assembler that has the power to let you program in style. But, he asks, why restrict it to rom?

FOLLOWING the release of Maxam II, the CP/M+ follow-up to the ever popular original Maxam, Arnor has produced yet another version of its assembler, this time the solely rom-based Maxam 1.5.

Maxam 1.5 runs on any CPC (with a rom board attached of course) and is designed to be used from within Protext, the excellent word processor from the same company. For this reason Maxam 1.5 has no integral text editor.

Although having Protext is a definite advantage, it is not essential, as Maxam 1.5 will assemble machine code which is embedded in Basic programs in the same way as does the original Maxam. It can also assemble source programs stored as standard text files from disc or tape, so you could use another text editor if you wanted to, although you would be missing out on a lot of extra features.

The program

Maxam 1.5 is supplied on a 16k rom which must be fitted into a rom board. The rom will take some of your computer's memory to play with, lowering Himem by some 571 bytes.

The display can be in either 80 column Mode 2 or 40 column Mode 1, where colours are used to make things easier to read.

The 50 page manual that comes with the original Maxam is supplied with extra notes for the "new improved" features of Maxam 1.5. Quotations from The Lord of The Rings are supplied as standard.

One important extra is the lack of the text editor. The memory freed has been used for the new commands.

The manual is very good, with an introductory section and lots of examples to type in. Of course, it won't teach you machine code, for that you'll need a big book and a pronounced tendency towards masochism.

Entering a program is as easy as falling asleep during Nightime on Channel 4 and twice as enjoyable. If you don't have Protext, you just put the machine code in your Basic program, preceding each line with a single quote mark (see Figure I).

If you have Protext, then just get it going in Program mode and start typing away. You can use all the normal editing functions and tab characters to produce code that looks so neat you might even understand it (see Figure II).

To assemble the program from Basic the bar command | ASSEMBLE is put in front of the code and Maxam gets to work. If you don't want a listing displayed during assembly you can use, | ASSEM instead.

But it is from within Protext that the extra features of Maxam 1.5 come into play. There is no need to leave the program editor. Typing ASM or TASM in command mode will assemble or syntax check (test-assemble) the program immediately. This makes life very easy indeed.

Maxam 1.5 will automatically put the object code about Himem, or anywhere you want using an ORG directive. ORG can also put the source code at a different address to where it is to be run. However, before Maxam 1.5 pokes your program all over the ram, it checks to see if it is overwriting anything important – this can make things a lot easier for the beginner who finds himself constantly wondering where his source code has vanished to.

The LIMIT directive can be used to set the boundaries of the object code to a user defined value, or to enable code to be purposely sent to a potentially dangerous location. Useful for patching the firmware block.

Assembling

The assembler has a full set of directives, including some enabling parameters to be passed to and from Basic, and others that allow conditional assembly (see Figure IV).

Assembling to and from files is fully supported, allowing you to combine several assembler text files which might contain a library of subroutines. Although not quite as flexible as the CP/M style RELocatable files, it can make your programming a lot more structured.

Printing features include titles, page numbers and adjustable page lengths.

Once your program is assembled, it is time to save it, hold your breath, and run it. But never

```
10 'Example Basic/Assembler program
20 'that prints a '*'
30 '
40 MEMORY &3FFF
50 GOSUB 1000 'assemble it
60 CALL &4000 'execute it
70 GOTO 70
1000 ASSEMBLE
1010 'text_output equ &bb5a
1020 'ld a,'*'
1030 'call text_output
1040 'ret
1050 'end
1060 RETURN
```

Figure I: Basic in-line assembling

```
;Assembler prog written with Protext
;to print out lots of '*'

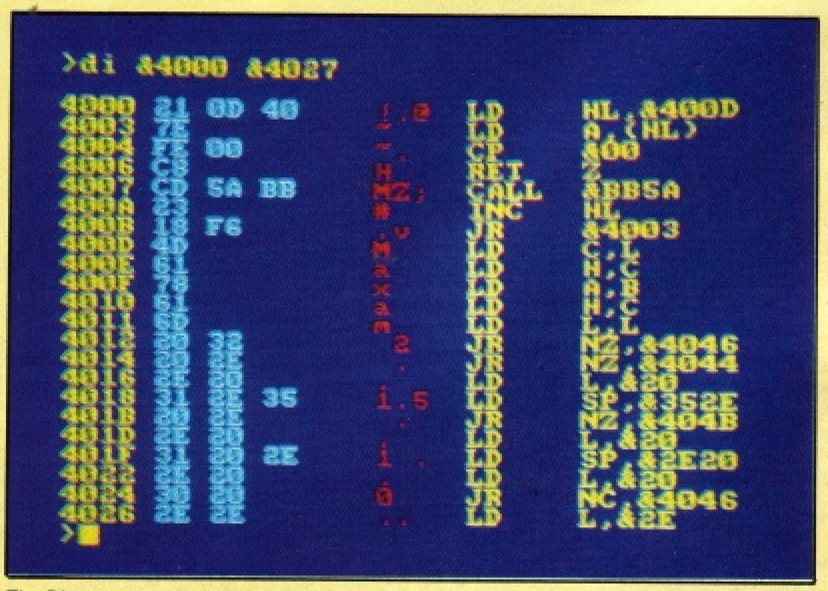
txt_output equ &BB5A

      ld a,"*" ;set A to asc 42
      ld b,20 ;loop cnt to 20
loop call txt_output ;print a star
      djnz loop ;repeat 20 times
      ret ;return to Basic
```

Figure II: Assembling with Protext



The Text editor option is now omitted



The Disassembler in action

LOAD	Load in any type of file, anywhere. The Basic LOAD sometimes gets upset when you try to load into certain addresses.
SAVE	As Basic, but with an extra optional fifth parameter which allows the code to be loaded and executed at a different address from which it was saved.
MEM	Allows you to set HIMEM from within Protext.
ROMON	Switches on a rom that had been previously been switched off.
HELPR	Lists software (not rom) bar commands.
DIF	Dissasembles a program directly to a file.
LIF	Lists a block of memory to a file.
ASM	Assembles the file in Protext's memory.
TASM	Test-assembles the file in Protext's memory. A complete set of bar commands are included that print out the contents of the registers, and allow them to be changed.
ASSEMBLE	Assembles the mnemonics in a BASIC program.
ASSEM	As above, but without the listing.
HELP	Lists out the name of all roms attached, and every bar command contained within them, if appropriate.
DI	Disassemble memory.
LI	List memory.
MFIND	Search for a string in a Basic program, listing occurrences.
MSL	Change the screen address to low memory (&4000) to avoid any possible clashes with sideways ram.
MSH	Move the screen to the normal position of &C000.
ROMOFF	Switch off specified roms.

Figure III: Maxam 1.5 provides you with a complete set of RSX (bar) commands, some of which were not available with the original Maxam

ORG	Where to put the object code.
LIMIT	Set boundaries for object code.
NOCODE	Tells the assembler not to produce any object code.
CODE	Cancels NOCODE.
GET	Read a parameter from Basic.
PUT	Return a parameter to Basic.
IF	Used with a simple expression to allow conditional assembly.
IF1	A condition which is always true on the first pass.
IF2	As above but for second pass.
NOLIST	Stops the producion of the listing on assembly.
LIST	Cancels NOLIST
LIST F	Send assembly listing to file.
PRINT	Allows text to be printed during assembly. Maxam 1.5 allows variables (for example, those used for conditional assembly expressions) to be printed.
PAUSE	Waits for a key to be pressed during assembly.
DUMP	Produces a list of defined symbols.
READ	Assemble the contents of a file on tape/disc.
WRITE	Write the object code to a file. If the file is given the suffix .COM a CP/M compatible file is produced.

Figure IV: Assemble directives are commands that are placed inside the source code to instruct the assembler how to go about various aspects of its business.

fear, Maxam 1.5 is here with a set of debugging commands.

You could jump right into your code with a CALL <address> from Basic, or the J (for jump) command from within Protext (or even the I J bar command again from Basic), which will send you straight to the start of your code. If all goes as expected you can go and lie down somewhere.

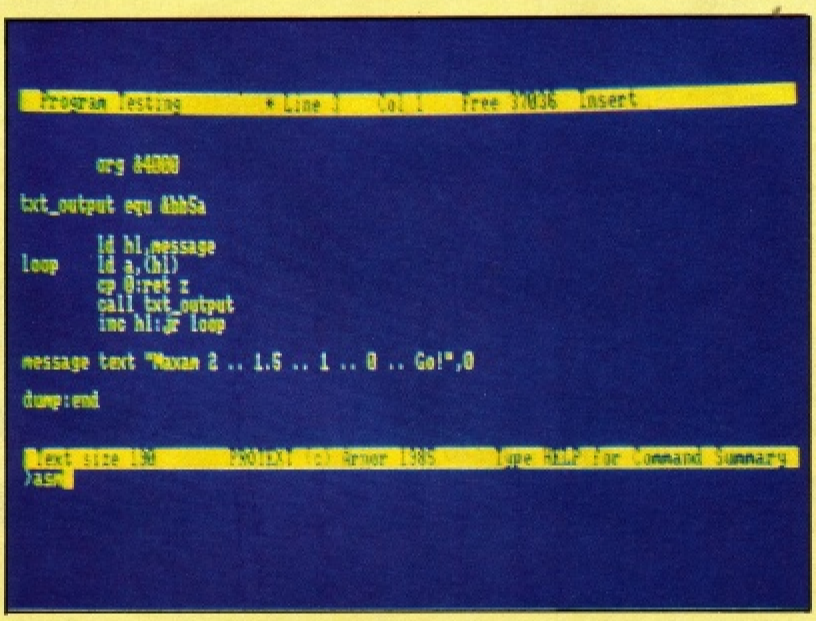
For those of us who are human, the breakpoint features will be useful. The original Maxam allowed you to put BRK directives throughout the source code. When the code was executed with the Maxam J option and a breakpoint was reached, Maxam printed out a list of the registers and their values.

Maxam 1.5 still allows this, but also allows breakpoints to be set after assembly. When the program hits a breakpoint you can directly change the contents of the registers, and then continue with your program. See Figure III for some further examples of Maxam 1.5 bar commands.

The monitor

Typing the I M bar command from Basic will take you into the Maxam 1.5 monitor program. From the menu you can dissassemble or list memory to screen or printer, select any upper or lower rom (and so dissasemble or list them), edit memory directly using either Hex or Ascii with a full screen editor, search for a Hex number or Ascii string and also move, relocate (intelligently) and compare blocks of memory. All are fast and you would have to enter pretty silly values to crash them.

A status line gives the current state of Himem and which roms are switched on.



Maxam 1.5 is designed for use with Protext

Conclusion

Just when I think the time has come for me to upgrade to an Atari ST, Arnor comes along with a package that leaves some 16 bit assemblers standing. Although lacking in the more sophisticated features such as macros, Maxam is incredibly easy to use. And Arnor has something to say on the monitor's lack of single- stepping facilities:

> *...there is no need to mention single stepping. We know! If the reaction to this is good, we will find time to implement it soon. Unfortunately, commercial pressures demand that other projects must take priority. If single stepping is added it will also be possible to insert a breakpoint at the current address when resuming.*

That little lot is part of a message displayed on the screen after typing a I QWXCL bar command. One hundred pixie points to the first person who can work out what QWXCL means.

Maxam 1.5 is aimed principally at those who have the Protext word processor and want a machine code development system that will integrate fully. However, for those without Protext, Maxam 1.5 is still a very good system. Developing programs from within Basic programs is a small inconvenience to pay, and is made up for by the excellent debugging functions and the lower price tag.

As to whether or not the lower price of Maxam 1.5 makes it a better first-time buy depends on how much you would use the text editor supplied with the original Maxam. I think perhaps I might get Maxam if I didn't have Protext. Then again, Protext is such a powerful program itself ... but that's another story.

Maxam 1.5 (rom) costs £29.95 and works best in conjunction with Protext (disc or rom).
Owners of the original Maxam can upgrade to Maxam 1.5 for £19.95.
Further details from Arnor on 0733 239011.

Ice Scream

Very little fuss has been made about Elite's wonderful new game. Simon Rockman goes Beyond the Ice Palace

WHEN Elite bought the rights to Thundercats they commissioned several different versions. One was the Gargoyle Games version which made the shelves and another was from Dave "Trantor" Perry. The Dave Perry version may not have won the Thundercats mantle, but it quickly shed the Lion-o and Monkeyman characters to become a non-licensed game.

Lovers of Elite's hit Ghosts and Goblins may remember that the last level was The Ice Palace. Anyone who suspects that Beyond The Ice Palace is an unofficial sequel is not far wrong, unless they are a lawyer for Capcom, the producers of Ghost and Goblins. In which case nothing could have been further from our minds m'lud.

The game takes an age to load, and lacks a title screen. Much of the loading time seems to be devoted to a scrolling message about how the land has been taken over by the forces of evil. There is no point in reading it. The message is reproduced on the inlay card, you can read that while the game loads. Then you can read it again and again. It takes a long time to load.

Weapon for war

As with Ghosts and Goblins, the strategy lies in which weapon you pick. There are four in the game – a dagger, sword, ball with mace and a sword of death. These have varying strengths, one, two, three and four hit points respectively. So a baddie which has to be hit three times with the dagger needs to be hit once with the mace or sword of death.

It so follows that daggers should be avoided and swords of death seized. The weapons do not run out, but it is often useful to pick up the weaker weapons to avoid bumping into them at crucial points.

You are well advised to do this at the start. Run to the left and get the dagger, stop short of falling off the ledge. Go to the right and pick up the mace. Now you cannot trip over the dagger, so run left and leap off the ledge. The further you are to the left the less likely you are to fall on a killer bat.

In keeping with Newtonian physics you cannot move in mid-air, so when you have landed your back will be to the bats. Turn and fire. The sweeping arc produced by throwing the mace is useful against the swooping bats.

Advance slowly, making sure you've killed all the bats you can see before moving on. When you get to the first little wall clear the area of bats and move as far right as possible.

Blast the wall with as many rapid shots as possible. Keep firing when it is destroyed to take out the first troll. Walk on, firing as you go. When you get to the second wall prepare for trolls coming from both directions. The second troll to appear from the left needs to be seen to before he can lob an axe at you.

Keep going. When the blue ghost appears run from it. You'll get killed if you try to take it on. You are usually safe from the ghost when you get to the steps going down. Crouch to kill the bats which are below and to your right.

If you find yourself at the wall with marauding bats and the ghost hovering it might be worth summoning the protecting spirit. This hovers around you, weakening or killing evil beings.

Demolish the wall and run to the ladders. Do not climb the first ladder. It's certain death. I usually climb the second ladder and take out the ghost at the top before running left to get the extra spirit and the ruby.

Dave Perry advises that you ignore the ladders and keep going right. Either way, avoid picking up the dagger at the point where the paths rejoin – just jump over it.

When you reach the next ruby an invincible wall magically builds itself behind you. This is not the result of picking up the jewel. A blue ghost then appears. Bust that ghost before proceeding, it will make life easier.

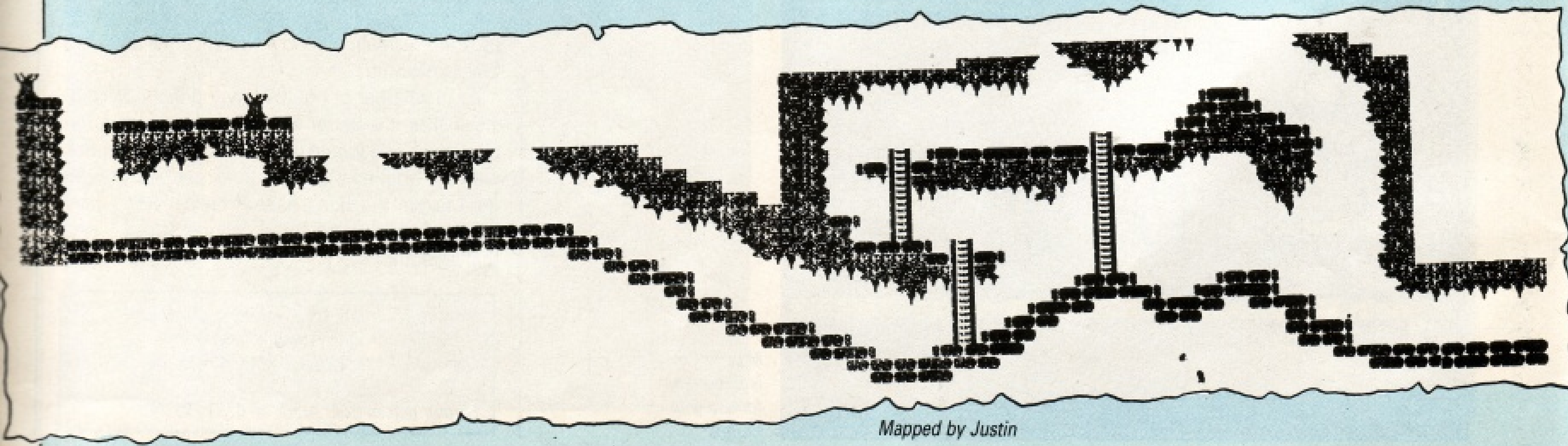
An uplifting experience

Walk right on to the ledge and the earth will start to move as the ledge turns into a lift. When the second lift goes past, dropping down, you should jump on to it. There is quite a bit of leeway in the timing because you can fall a long way without getting hurt.

If you fall off a lift you will drop into a bottomless pit and die, to be re-incarnated before the first ledge. If you don't get off the lift you will be attacked by bats and then crushed at the top. The second lift takes you up into the bats. These can







Mapped by Justin

appear on either side making it the least predictable part of the game.

Crouch and shoot. I've managed to get this far without being killed, only to lose all my lives at this stage.

If you are lucky you will take out all three bats. Don't rush to get on to the third lift – it stays above you for a while – and a slip will send you plunging deathward.

Once on the third lift move all the way to the right. You cannot fall off and the jagged walls will not even scratch you.

At the top jump right. Take out the ghost as quickly as you can. Do not try to run away or you will make things worse when you meet the dragon. This is the most fearsome beast in the game, owing much to Space Harrier.

Trying to take on the dragon and ghost at the same time is too risky. The battle is easier if you jump over the sword. This is another place where summoning the spirit is not unwise. The dragon vanquished, a ladder drops down. Climb up for level two.

The screen fades between levels. This effect, like the monster's death explosions, is reminiscent of Trantor which DP wrote after Ice Palace.

Upward and onward

At the beginning of the second level you are confronted with two ladders. The second one leads to a dead end. It isn't worth the risk of climbing it for the Spirit at the top.

Climb the first ladder. If you picked up the sword at the end of level one get the mace from here. Knock out the bears and climb the left hand ladder.

Keep on going up. At the top fire rapid shots at the Buddha-like monster. Duck down the ladder to avoid it. With the Buddha out of the way go down the ladder and get the dagger. Return to the ladder and climb up.

Hop on to the moving floor. Falling off is safe enough unless you land on a bear. You can walk off the moving floor at the other side. Here you will find a sword of death. Get it and jump on to the next moving floor. If you had not picked up the dagger earlier you could fall on to it and lose the sword of death.

When the moving floor gets to the other side notice that it does not touch the edge, meaning a big and tricky jump. Knock out all the foes as you keep climbing. The four hit point sword of death is powerful enough to allow you to kill the Buddha without ducking down ladders.

Always cross the big gap by a moving floor; the bit which looks just jumpable isn't. If you are lucky you will drop on to a moving floor.

It has been a hard battle, but the worst is to come. A swarm of killer bees buzzes around the top. Knock out the queen bee and a ladder will appear – your route to level three.





The final encounter

Here the beasts get vicious. There is much axe throwing and losing of lives. If things have gone according to plan you should be wielding a sword of death. There is no point in picking up the second one at the start of level three. Leave it alone.

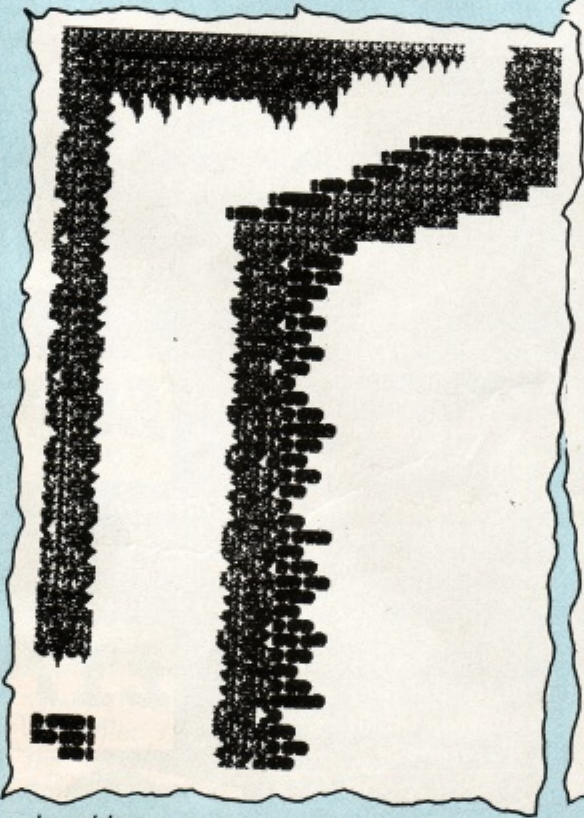
Carry on fighting your way to the top. Once again take things slowly – there is no time limit.

Dave Perry has been fiendish, as you jump on to one ledge you are forced to pick up a feeble dagger. Dave claims that there is one pixel you can land on which is safe. I couldn't find it. Instead pick up both daggers, fall through the gap and run down the ladders to get the sword of death you left alone earlier.

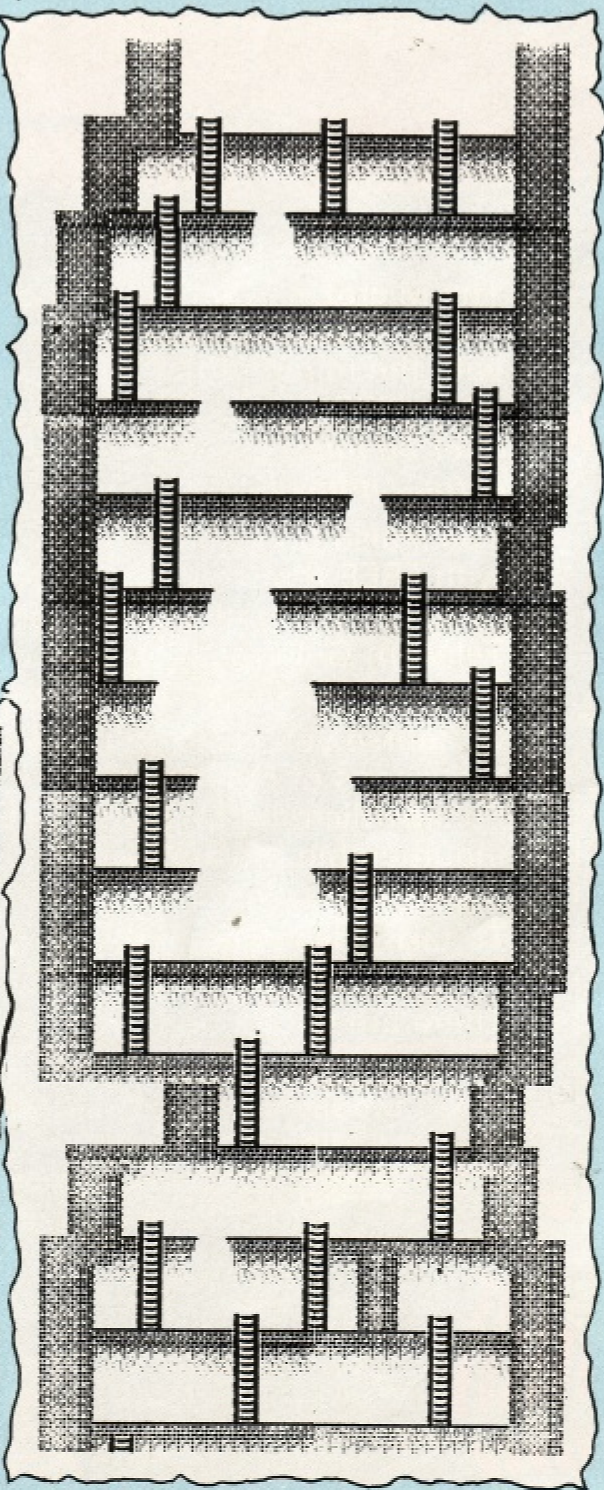
Any extra foes you have to deal with are worth the risk for a sword which is four times as powerful.

The ultimate challenge is the witch at the end of the game. By now you should have honed your skills at ducking on ladders. You had better hope so. To miss the witch's thunderbolts you need to be deft, but it is possible to defeat the evil and free the land.

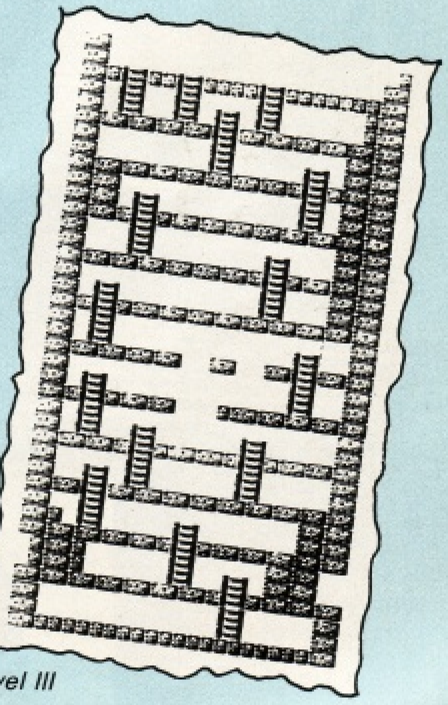
Can you do it?



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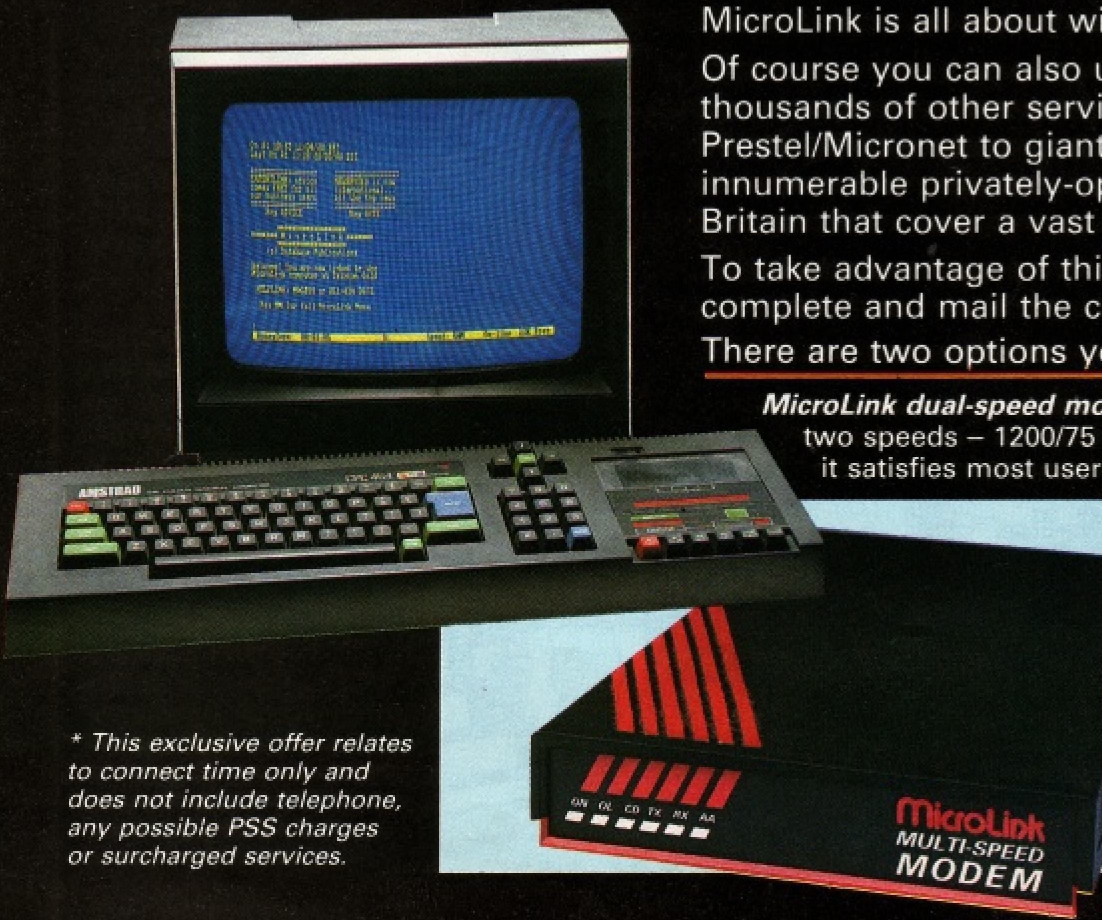
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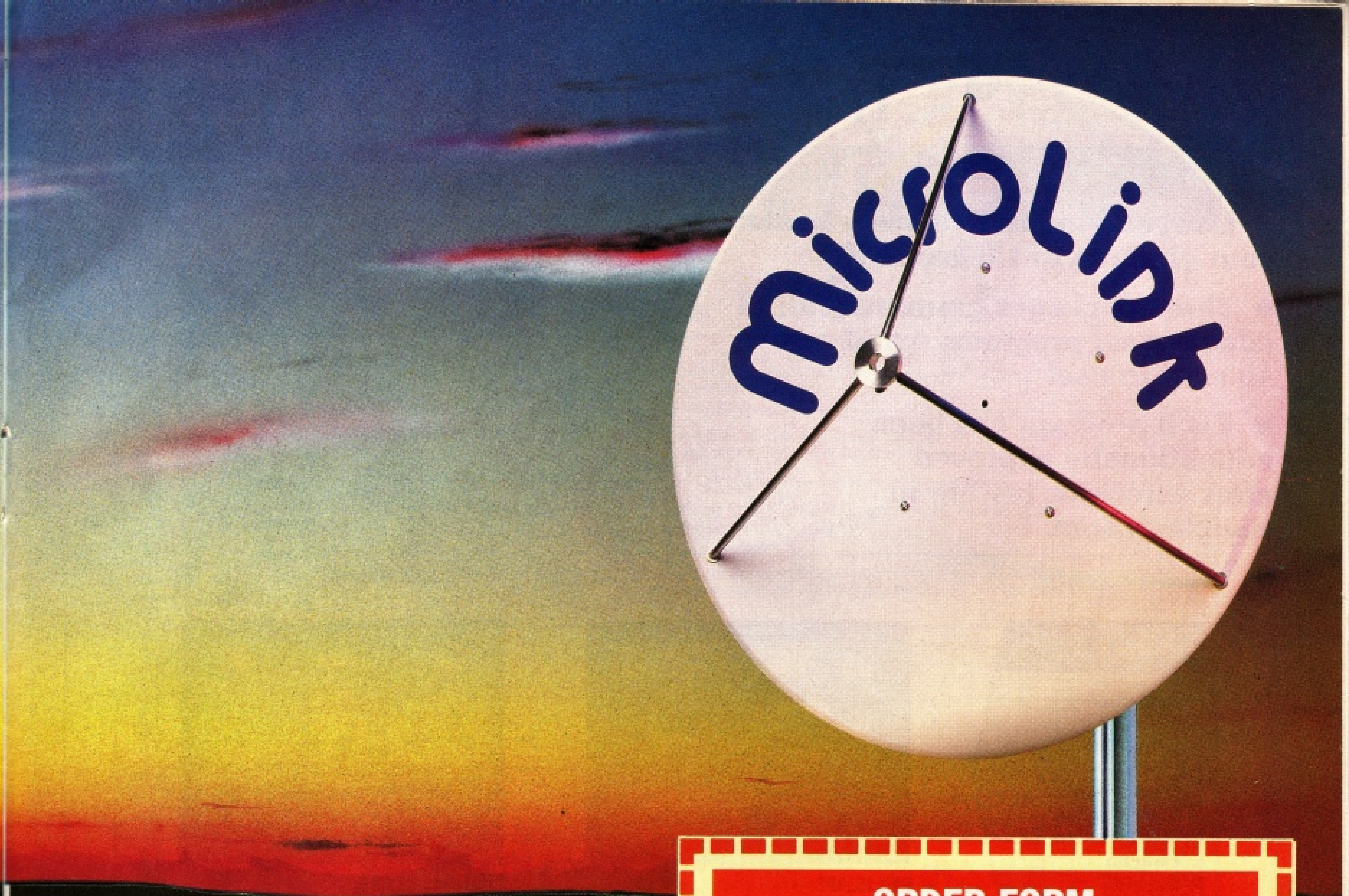
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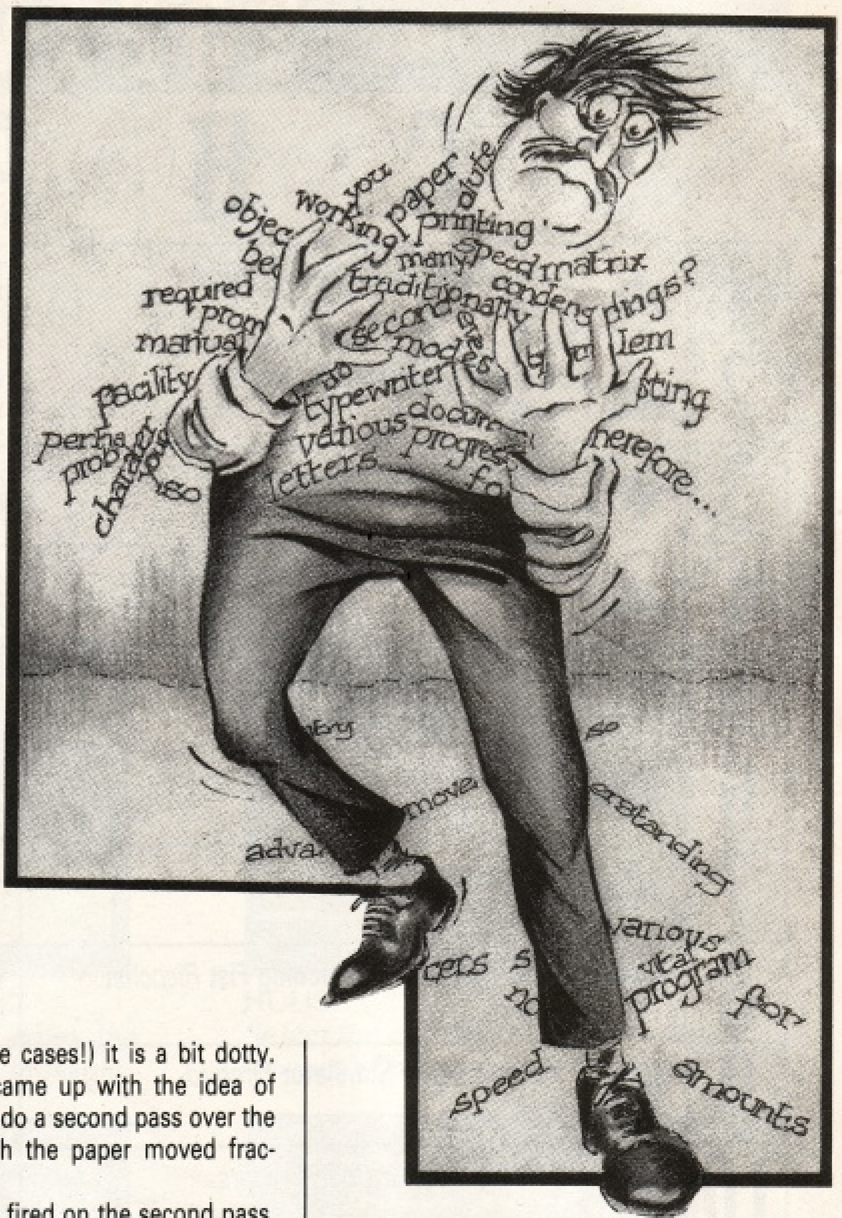
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GALLUP SOFTWARE CHART

Position	Movement	Title / Publisher / Price	Comment	Last month	Market strength
1	Up	**Steve Davis Snooker** *Blue Ribbon* 1.99	The original full-price version sold more than 180,000 copies. Tests the cuemanship of even the most expert player.	2	100
2	Up	**Super Stuntman** *Code Masters* 1.99	Wot no simulator? A real wrecker's game where you score big points for spectacular crashes.	13	80
3	Down	**Ghostbusters** *Mastertronic* 1.99	Great film, great music, great price. Shame about the conversion.	1	72
4	Up	**Fruit Machine Simulator** *Code Masters* 1.99	All the fun and flashing lights for a one-off budget price payment. Apart from that, just like the real thing.	15	64
5	Down	**Trap Door** *Alternative* 1.99	Berk, Druk and Boni star in a game which is still a firm favourite with the Rawlins family. Great animation, but tricky to play.	4	57
6	New entry	**Dan Dare** *Mastertronic* 1.99	Addictive re-release with clever puzzles and plenty of aliens to shoot at.	NE	52
7	Up	**Popeye** *Alternative* 1.99	Fun and frolics with Bluto, Olive Oyl, et al. The price is right.	18	51
8	Down	**The Way of the Exploding Fist** *Ricochet* 1.99	The karate game which started it all. IK+ is better, but this is a cheap bit of computer game history.	3	49
9	New entry	**Ninja Scooter Simulator** *Firebird* 1.99	A totally RAD game for those with a penchant for one-legged pedalling. Jump the grates, fly the ramps. Ninja?	NE	49
10	Down	**BMX Simulator** *Code Masters* 1.99	A totally RAD game for those with a penchant for two-legged pedalling. Jump the ramps, race a friend. Been around a very, very long time.	5	48
11	Down	**3D Starfighter** *Code Masters* 1.99	Billed as the first shoot 'em up from the Oliver twins, a surprisingly deep budget title with solar systems to navigate around and convoys to defend.	7	45
12	Down	**Pro Ski Simulator** *Code Masters* 1.99	Quote: "I could understand if you said this was too difficult, but there's some good programming in there," The Oliver Twins (programmers).	5	43
13	Down	**Skate Rock** *Mastertronic* 1.99	Bubble Bus programmed mode 0 game. All skate and no rock. How did it get this high up the chart?	12	42
14	New entry	**We are the Champions** *Ocean* 9.99	Compilation featuring Renegade, Rampage, IK+, Barbarian and Super Sprint. The fighting games are good.	NE	41
15	Down	**Grand Prix Simulator** *Code Masters* 1.99	Why buy Super Sprint when this is better and cheaper? Why buy this when Jet Bike Simulator is so very much better?	10	41
16	Down	**Out Run** *Sega US Gold* 9.99	Yawn. Running out of steam this one, and deservedly so. All hype and no game.	8	41
17	New entry	**10 Great Games II** *Gremlin Graphics* 9.99	Another presentation box of good Gremlin games for less than £1 each. Can't be bad.	NE	39
18	Down	**LA Swat** *Mastertronic* 1.99	Patrol the streets, watch out for muggers and terrorists, shoot to kill, but try to avoid innocent bystanders. Awfully boring.	11	37
19	New entry	**Shanghai Karate** *Players* 1.99	Fast action and colourful graphics with gameplay to match.	NE	36
20	Up	**Magnificent 7** *Ocean* 9.95	Actually eight games: Head over Heels, Cobra, Short Circuit, Frankie, Arkanoid, Wizball and Yie Ar Kung-Fu.	RE	36

Non-mover — Up — Down — New entry

Printer panacea



David Foster takes a comprehensive look at the problems which novice users encounter when they buy a printer

THERE have been so many printer related problems in Applications Advice that I intend to try and eliminate some of those that appear to cause most trouble regarding the choice, installation and use of printers.

Most of the problems can be broken down into one of these categories:

- How to connect it to the computer.
- How to get it working.
- How to understand the printer manual.
- How to make use of its various features from within a program.

There can be a lot of pitfalls for many people who have just bought their first printer, so I shall start from the beginning and progress through to using one in programs. Before doing that, it is worth considering what types are available and for what they are best suited.

Dot matrix printers

These are by far the most commonly used with home computers. They are generally the most reasonably priced, while at the same time being far more flexible in use than daisywheel printers.

A dot matrix printer creates characters on the paper by firing a number of pins at the paper through a ribbon, so that the pattern made by the dots form the character shapes. This is usually done by the pins being in a vertical row in a print head that passes backwards and forwards over the paper, with the appropriate pins being fired at the correct time.

9 pin or 24 pin printers

Traditionally, most dot matrix printers have nine pins in the head, which gives a reasonably recognisable character, but when looked at closely (or not so closely in some cases!) it is a bit dotty. Then manufacturers came up with the idea of making the print head do a second pass over the line of characters with the paper moved fractionally.

When the pins were fired on the second pass, the new dots overlapped the old ones, filling in most of the gaps between the dots. This gave a much more solid appearance to the letters and was called emphasised printing.

Eventually manufacturers came up with the idea of making the characters, which had previously looked very computer-like, look more like the characters you would expect to get when you use a typewriter and this became known as near letter quality or NLQ. One big disadvantage of this is that because two passes have to be made over the line, it is considerably slower than normal draft printing.

NLQ is considerably slower than the half speed that you might expect, because, whereas in draft mode the printer head goes from left to right and right to left, when in NLQ mode it only prints when going in the same direction on each pass, which means that the print head has to do an extra pass, back to the start of the line, before doing its second print pass.

Typically, the speed in NLQ will be about a third of the speed in draft mode.

Manufacturers then hit on the bright idea of putting more pins in the print head, so that more pins could be fired at a time. The advantage is that the printer can then print all the dots for a NLQ character in one pass, making it much faster and the characters can be better formed with more dots.

In addition they provide a facility to print in draft mode, in which case only some of the pins

The new Brother 1709 dot matrix printer



are used when the pass is made across the paper.

A number of different pin arrangements were developed by various manufacturers, but most of the current models have 24 pins arranged in staggered rows in the print head. These are known as 24 pin dot matrix printers, the original type becoming known as 9 pin dot matrix printers (amazing logic!). Another variation is where the print head has 18 pins, but these are not so common.

Speed

Printers are rated in characters per second (CPS). It has to be said that the figures quoted by most manufacturers are suspect. In most cases they are obtained under ideal conditions and often consist of the time taken to print a complete line of the same character across the paper.

Life isn't like that, and we frequently want to print only part of a line, not to mention that we would normally prefer to use something other than the same letter throughout a document.

However, the quoted figures do provide a guide to the relative speed of different models. It would be sensible to base true speed of printing on a figure of about two thirds of the quoted speeds when making comparisons.

Typical figures for printing in draft mode vary from about 80cps, up to 400cps or more, with 24 pin tending to be faster, and noticeably faster in NLQ mode.

The faster the printer, the more expensive. You might well find that a model from one manufacturer may well be faster than a more expensive model from a different manufacturer.

Daisywheel printers

These are more closely related to the electric typewriter than anything else. Instead of having a print head that contains pins, the daisywheel has a rotating wheel with lots of "fingers", each of which contains the shape of a character.

When printing, the print head moves across the paper to the correct position, then the wheel is rotated until the correct character is lined up and the print head hammers it through the ribbon to print it.

This is a slower process than just firing pins. Not only does the print head have to be moved across, but, depending on the next character required and its position, the wheel might have to turn almost a complete revolution to locate it.

Typically, a daisywheel printer will be quoted as printing between 12cps and 50cps, with the latter being at the top end of the price scale and also tending to make a lot of noise in the process.

The quality achieved with a daisywheel is the same letter quality you get with an electronic typewriter. For a long time this has been the type chosen by people who require the best quality output at all costs, though in the commercial world there is now the alternative of the laser printer. Quiet, fast (700cps) and high quality make the laser printer the way of the future, but it is held back by a price in excess of £2,000.

There are a number of disadvantages to the daisywheel, which for home computer purposes will often rule out its use.

You can only print the characters that are avail-

```
Print Speed         216 c.p.s. Draft
                    60 c.p.s. LQ
Resident Fonts      Prestige, Italics
                    Proportional, Draft
Pitches             5, 6, 8.5, 10, 12,
                    17, 20, PS.
Print Styles        Enlarged ,
                    Condensed, Emphasised,
                    sub a    per scr
                    Under
Graphics            16 m
Character Sets      96       , 43
                    nat   (16
                         s) and
Buffer
Download Memory
Emulations
```



This sample was produced by the Brother 1724

Type	Advantages	Disadvantages
Dot matrix 9 pin	Price Flexibility Ability to print graphics Fairly fast output	Varying quality: poor to NLQ
Dot matrix 24 pin	Approaches letter quality Ability to print graphics to high resolution. Faster than 9 pin dot matrix	Price
Daisywheel	True letter quality	Inflexible print style within a document. Tend Tends to be noisy Price Slow

Figure I: Advantages and disadvantages of dot matrix and daisywheel printers.

```
Resident Fonts      Draft, NLQ(prestige), Proportional, Italics
Pitches             5, 6, 8.5, 10, 12, 17, 20, PS.
Print Styles        Enlarged , Condensed, Emphasised, sub and super script
                    Underline.
Graphics            7 Modes.
Character Sets      96 ASCII characters, 43 national characters (16 countries)
                    133 IBM PC characters
Buffer              3K byte on 1409 and 1509 expandable to 19K with LQ200
                    24K byte on 1709 expandable to 40K with LQ200
Download Memory     Switchable from input buffer.
```

Sample produced by the Brother 1709

able on the wheel you are using. As most wheels contain only upper and lower case characters and most of the punctuation marks you cannot use italic characters or those of a different style in the in the same document. You can change wheels so that you can use different typestyles, and some programs will allow you to pause printing while you change the wheel, but this is hardly convenient.

Perhaps the biggest reason why daisywheels are not so popular for home use is that it is not possible to print graphics with them.

In summary, the main features affecting the choice between a daisywheel and a dot matrix printer are as shown in Figure 1. Although it has to be said that as the quality of output possible with the latest dot matrix printers approaches that of a daisywheel, there may be little reason to consider a daisywheel unless it is essential that your documents have true letter quality output.

Epson compatible?

When you want to tell your printer to do something special, such as change print styles, or go from draft to NLQ mode, you or your program will send a sequence of control codes to the printer. In years gone by, each make of printer had its own sequences of codes, but as time has passed the codes used by Epson, one of the longest established manufacturers, have become more or less a standard among dot matrix printers. Most programs provide the required codes for an Epson-compatible printer, even if they do not support any others.

If at all possible, you should choose a printer that is described as being Epson-compatible, as it can mean a lot less work when getting your programs to work with.

The situation is not quite so straightforward with daisywheel machines. The standards are a bit more varied. One of the most common is the Diablo sequence of codes, and some programs provide suitable drivers. You will often find you have to install your own driver for use with a daisywheel printer.

Connecting

Assuming you have bought a Centronics/parallel printer, you should have no problem purchasing a cable (if one was not supplied), as long as you specify that it is to connect to an Amstrad CPC.

In certain circumstances you may find that when you print something you get a double line space between lines. This may just be because you haven't got the dip switches (more on them later) set correctly, but it may be that the cable is not wired quite correctly for the CPC.

If changing the dip switch settings doesn't solve the problem, you can do a number of things. Firstly, you can take the cable back and ask for a replacement that works properly, or you can modify the cable yourself.

The cause of the problem is that pin 14 on the printer end of the cable should not be connected when used with the CPC. You can test this quite easily by just putting a small bit of adhesive tape over the connector for pin 14 and then connecting it up and trying again. If you never disconnect your computer, this might well be sufficient, but if you frequently have to disconnect, it is probably better to work out which wire is the one that goes to pin 14 and sever it carefully with a sharp knife. Take care though, because the wires in a ribbon cable do not always run sequentially, but alternate with the wires for the pins on the other side of the connector, so that you get wire to pin 1, then 19, 2, 20, 3, 21 and so on.

```
Dual Interface (RS232C and Centronics Parallel)
Diablo 630 emulation.
8 bit character set.
Two colour printing (Red and Black).
Graphics (Diablo A.P.I. compatible).
Extensive front panel control.
8K buffer with reprint copy facility.
```

Sample daisywheel output

DIP switches

These are a series of little switches provided to set the default values your printer will always select when it is switched on. Items that can normally be set by these switches vary from printer to printer, but in virtually all cases, will cover at least the following:

- International character set – different settings determine whether the pound sign, dollar sign, or Peseta are printed, as well as a number of other characters.
- Line feed on/off – determines whether a line feed will be sent when a Return is received, or not.
- Line spacing – 1/8in or 1/6in between lines
- Continuous or single sheet – determines whether the printer pauses between pages.

Most printers will have many more options. The dip switches may be located in a number of different positions, varying from being buried inside the printer, to being located on the back panel, or even in some thoughtful cases, under a small cover panel on the top of the printer. Usually, they are minute switches that require a pointed object to adjust them, occasionally they are of a more realistic size.

The only way to work out what the settings should be is to read the manual. If you change the setting of a DIP switch you must switch the printer off for a second or two and then switch on again. The settings only take effect when it is switched on initially.

I would recommend that apart from making sure that the switches are correct for the International character set and that the switch for line feeds is set to off, the remainder of the switches are left at their default settings and only altered if something is obviously not correct and then make only one change at a time, before doing a further print test.

If your printer does not have Epson-compatible control codes and you are using a program that makes use of different type styles you will probably find that when you tell the word processor to print something underlined or emphasised that unexpected characters will be printed, but not the

SERIAL OR PARALLEL INTERFACE?

Many printers are available with a choice of interface to permit communication with your computer. The most common interfaces are Centronics, also known as parallel, and RS232, which is also known as serial.

In most cases the parallel/Centronics type would be chosen, as the CPC range is provided with a parallel port to connect your printer to. You would have to buy an RS232 interface for the computer in order to use a serial/RS232 printer. Another deciding factor is that the procedures required to get a serial printer working are more involved.



The Diconix 300 ink jet printer

effect you want, or else the wrong effect is produced in some cases. The reason for this is that the program is sending the incorrect codes for your particular printer.

Printer drivers

A printer driver is a table used by a program to find out which codes should be sent to the printer to select different features. Each program will have its own printer driver, and many programs allow you to select from a range of pre-defined drivers. By default, most programs are set up to work correctly with Epson compatible printers.

In some cases the program will provide an installation program or procedure that asks you to provide the required codes for your printer. This is where the fun starts, because many printer manuals seem to have gone to great lengths to make it burdensome for you to work out what the required codes are.

Translating the manual

It has to be said that printer manuals are a lot easier to understand than they used to be. Many of the older ones were written in Japplish, an English/Japanese hybrid favoured by many oriental manufacturers.

Two main problems are encountered when

Other Basic	LPRINT
Amstrad Basic	PRINT#8
Other Basic	OPEN"LPT1" FOR OUTPUT AS #1 PRINT#1
Amstrad Basic	Ignore first line Use PRINT#8 instead of PRINT#1

Figure II: Differences between most other Basics and Locomotive Basic as far as sending printer control codes is concerned

trying to sort out the required printer control codes.

Firstly, examples are given for how to use the codes from Basic. There are dozens of different Basic dialects and rarely, if ever, is Locomotive Basic the one used in the examples.

Secondly different printer manufacturers use different terminology to describe the same code sequences. For example: ESC,"A",1 is exactly the same thing as 27 65 1, as is 1B 41 1

When examples are given in Basic, this is frequently Microsoft Basic, which is as near as you can get to a standard in Basic. Figure II lists most of the changes that will be required to use the examples on the CPC. With these changes, it should be possible to try out most of the manual examples.

When working with commercial programs the situation is rather different. They usually require you to tell them the codes in a particular way. Read the program instructions thoroughly to find out whether it requires decimal or hex.

You should also find out whether the program requires each code separated by a specific punctuation mark, and how to tell it when you have finished entering a set of codes.

Having found out what the program requires, study the printer manual to see in what form it shows the codes. If you are lucky, your manual will show the codes in all possible forms. In this case you shouldn't have many problems, but many manuals only show them in one or other of the possible forms.

Decimal codes are just numbers, but sometimes they are mixed with alphabetic characters in quotation marks. This is just another way of showing the same thing. The Ascii code for A is 65 and when you put the character A in quotes it means that it should be treated as the Ascii code for that character. One thing to watch out for is that "1", in quotes, is an Ascii character with the decimal value 49, whereas the number 1, not in quotes, has an Ascii value of 1. You can be fairly certain that if there is a single alphabetic character in the list of codes, it is meant to be treated as having a value of that Ascii code. Remember that case is specific. "A" is not the same as "a".

Hex, or hexadecimal numbering, is a way of expressing the same numbers, in a different form. If you are not sure of them and your program requires hex you can always look up the decimal equivalent in the list of Ascii codes in the computer manual. One thing to be aware of is that some printer manuals express hex numbers in different ways. Figure III lists the most commonly used variations.

There is a third way to describe control codes, involving the use of words. A few are used by most manuals, such as ESC which has a decimal value of 27 and CR which has a value of 13. These are a hangover from earlier days, but some printer manufacturers make a lot of use of them.

If there isn't a conversion table in the printer manual you will find them listed in the CPC manual at the start of the Ascii tables. Most have a value between zero and 31 decimal.

Often a feature will be turned on and off by using the same codes, but ending with a 1 to turn it on and a 0 to turn it off. Being unusually helpful for a change, most printers will allow you to enter this either as a decimal number 1, or as an Ascii character "1" and it will automatically sort it out for itself. This does not apply to all printers and, operates only when it is the last character of the code sequence.

Codes may have parameters that will vary according to the purpose you want. These are frequently shown as a lower case n, m, or some other character. This does not mean that you should enter the letter concerned, nor its Ascii value. The character is being used to indicate a variable, and usually you will find the permissible values listed beneath. It is one or more of these values that should be entered.

An example of this might be ESC,"R",n, which is the Epson sequence to select an international character set and the permissible values for n are 0-7. For England you should enter ESC,"R",3

There are so many different possibilities with graphics codes on dot matrix printers that it is not possible to describe them adequately in this article, and in any case most programs that produce graphics printouts are already configured for an Epson-compatible printer.

I would suggest that you make sure that the program is compatible with your printer and this is justification enough for most people to make sure they get one that is Epson-compatible printer.

Conclusion

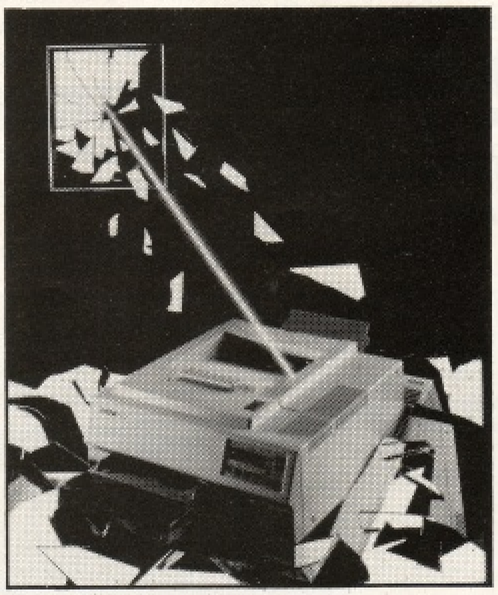
I would recommend that you don't attempt to enter several codes all at the same time unless you are 100 per cent sure that you have them right. It is far simpler to enter the codes for, say, enlarged printing and then to test it out, than it is to enter all sorts of codes and then not to know which one is causing a problem.

PROPORTIONAL SPACING

Proportional spacing is nothing to do with the SDP. It is a feature where the printer prints characters according to their width, narrow characters, like i and l take up less space than characters like w and m. This gives an effect much more like the type of print that you might find in a book or magazine.

Some word processing programs, but by no means all, allow you to make full use of this feature by right-justifying the text and filling any excess space with the first word from the following line. The result is exceptionally good, and the extra expense of buying a printer with this capability is worthwhile if you use such a program.

The printing speed with proportional output will be reduced due to all the extra calculations that have to be carried out by the program.



Brother's latest laser printer

Different ways of showing hexadecimal codes used in printer manuals. There are others, but these are the most common.

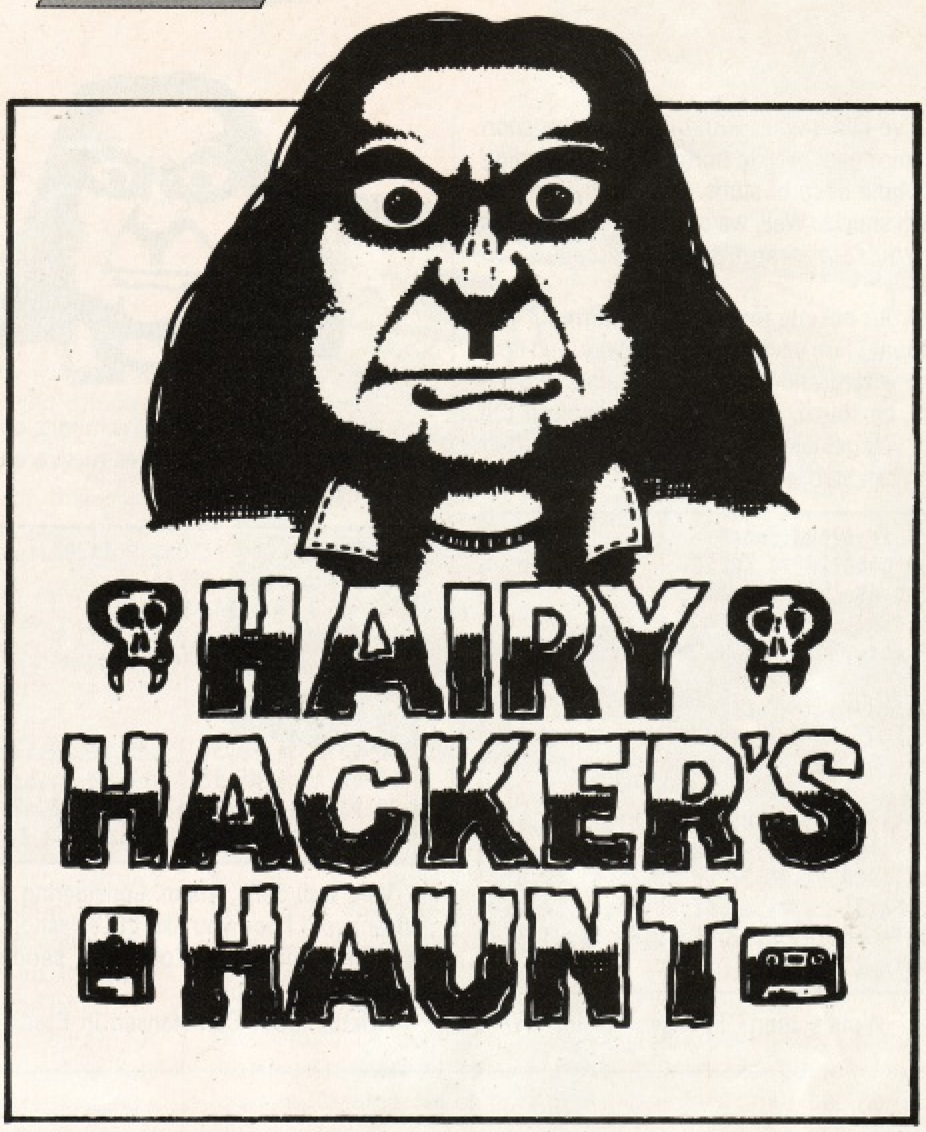
All the following are the code for the Ascii character Z, which has a decimal value of 90.

5A hex 5AH $5A &5A &5AH #5A <5A>H

Figure III: Common variations in control codes

Pacing the carpet

Paternal thoughts are the order of the day as Vax looks forward to the patter of tiny peeks



G'DAY cobbers. We're a bit short for locations this month due to poor old Alex getting more than slightly squashed on a zebra crossing. Get well soon, Alex, 'cos while you're in there, there is the serious problem of Hairy Hackers being on location in the middle of a collection of large blank spaces, with only some Dire Straits as background music. Bit like the inside of me head, as it happens.

Now a happy announcement (I think). Suz has developed this incredible bulge round front, which means the imminent arrival of a small, shrivelled, hairy hacker(ette) testing its little lungs all night long. It ought to be popping into this world about the time you're reading this, and I'll fill you in on the grisly details in a couple of months. Me, a daddy. Don't it make you feel old? I'm looking forward to poking it in the ribs though.

And here's a baby poke for CP/M+ users: You can remove the status line (the bit saying Drive is A:) by typing ESC plus 0 and Enter. Use Exit plus 0 and Enter on the PCW. Using 1 instead of 0 puts it back again. The same principle works with all the upper case commands in the VT52 emulation (see manual), so ESC E ESC H clears the screen and homes the cursor. Useful, no? Control sequences do the same thing on CP/M 2.2, but you can't type all of them in.

Now some slightly techy stuff (that was techy, not tacky, sunshine). Mr. Glynn White (of Balloch, remember?), dissatisfied with my Pacific poke decided to delve into machine code and write his own. Armed with his copy of Machine Code for Beginners by Steve Kramer, he noticed that it referred to LD HL,(nn) as both 2A,nnnn and ED,68,nnnn. Well, the second one isn't in my trusty Zilog manual, and it looks suspiciously like an IN instruction, so you can safely assume that either they meant ED,6B,nnnn or you did.

The reason for two identical but different commands is this: As the Z80 is what an 8080 wants to be when it grows up, there is frequently both the 8080 way – often shorter and quicker – and the Z80 way. The Z80 way is longer because it can be done with most registers, whereas the 8080 way only works with the HL register. OK?

Thanks also, Glynn, for spotting the error in the Goonies poke from J. Brooks in the May edition. Line 170, third data item, shouldn't read 3r,5F,4B, but 32,5F,4B, which makes a lot more sense. You can feel smug now, Glynn.

A cute letter, vaguely Mickey Mouse shaped, has come in from Martin Fenton (aged a tender 8 years) of Wanstead. This budding hackster has noticed that on the disc version of Electro Freddy you get double speed when you use the joystick and the keyboard keys together. One to look out for is that. Thanks for pointing it out, Martin.

A more embarrassing literary work came from Timothy Bell in County Durham mentioning that the disc poke for driller "didn't *!@!?&% work". Um, well I can't actually tell you why, 'cos (a) I think it was a Justin poke; (b) the Ed has nearly all the games tapes; (c) people bring out different versions; (d) just 'cos the checksum worked, it doesn't mean you didn't stuff another part of the loader; and (e) you didn't say what issue it came from or how it fell over. I'm sure Ed will ask Justin for a full report though...

He also asks about me pentacle. Well, Tim, there are two kinds of pentacle – those with one point at the top, and those with two. Those with one at the top protect the bearer from evil spirits, bad luck and typing errors. The other way up is supposed to breed such things.

I wish to point out that I am, and have never been a werewolf, and that the rumours to that effect should stop right nooooooooooow! (Sorry about the frivolity, other bearers of pentacles, but if I get too serious the Ed thinks I'm not working hard enough).

Still more from the quite pleasantly bulgin' mailbag (in view of the last letter, "bunglin'" might be more appropriate), from Mike Williams. He sez, "Hobe da dold is bedder". Well, it definitely is, and I for one will vouch for the effectiveness of Hibernian Cough Cure (Cheers! Hic.) I hope, by the way, that your thermal printer gets better soon, but don't feed it the Hibernian Cough Cure.

Eh? Poke? Oh yes, he sent in a poke for Doodle Bug. Hope this works 'cos there's no checksum, and I haven't got a copy of it (y'hear that, Ed?). Run this and insert the re-wound tape, like wot used to be called a PASTE [R] before some folks complained:

```
270 REM a lot of rems missed out here
280 MODE 1:MEMORY &752F
290 LOCATE 5,12:PRINT "DOODLE BUG is
now loading........"
300 LOAD"!"
310 POKE &7704,&C9:CALL &7627
320 LOCATE 5,20:PRINT"3 mins 40 secs
to wait...."
330 FOR a=&BF00 TO &BF12:READ a$
340 POKE a,VAL("&"+a$):NEXT
350 CALL &BF00
360 DATA 3e,5b,21,c5,01,11,15,a4
370 DATA cd,a1,bc,3e,ff,32,ce,7f
380 DATA c3,53,a5
```

Adam Todd has been mighty prolific again, despite a shortage of promised games. Well

Adam, I've had a word with the Ed, and as soon as his voice gets back to normal he'll be sending you a whole heap of stuffs. Did I really call you Alan? Oh shucks. Well, we all make mistakes, but when you're a programmer it's called job insurance.

I like your pokette for The Fear (Storm II). The instructions were a bit of a bind anyway, and now that the wizard and princess are karate experts and kill by touch, you can freely explore the maze. If you get lost, he says, just press Q to Quit and you can start all over again.

```
10 MEMORY &2B00:tot=0
20 FOR b=&BF20 TO &BF53
30 READ a$:c=VAL("&"+a$):POKE b,c
40 tot=tot+c:NEXT b
50 IF tot<>&18CE THEN PRINT "ERROR!":S
 TOP
60 LOAD"!data.bin",&2C46
70 LOAD"!frost.bin",&C040
80 CALL &BF20
90 END
100 DATA e5,f5,c5,d5,21,44,bf,11,40,ca
110 DATA 01,10,00,ed,b0,21,40,c0,11,40
120 DATA 00,01,04,2c,ed,b0,d1,c1,f1,e1
130 DATA 31,fa,bf,c3,40,00,f5,e5,3e,43
140 DATA cd,1e,bb,c2,79,2b,e1,f1,23,23
150 DATA 23,3a
```

Oooo! Wotsis then? Energy Warrior. Well,



apparently this one gives you infinite energy and 90 blitz bombs for your destructive enjoyment. Just maintain the aura:

```
10 MEMORY &A1FF:LOAD "",&A200:tot=0
20 FOR b=&A3FC TO &A423
30 READ a$:c=VAL("&"+a$)
40 POKE b,c:tot=tot+c:NEXT b
50 IF tot<>&114B THEN PRINT "ErRoZR!
": STOP
60 CALL &A411
70 DATA 3e,90,32,19,30,ee,59,32,ea,12
80 DATA c6,06,32,7a,bc,cd,7a,bc,c3,1e
90 DATA a4,21,0a,a2,e5,21,00,a2,e5,3e
100 DATA 19,32,1a,a2,3e,c3,32,7a,bc,c9
```

Very well done, Adam. Considering the lack of incentive. I hope you like the selection the Ed is sending you now. You have sended them, haven't you Simon?

A letter from Carl Hansen in Essex – one of quite a few in fact – about the Encrypt/Decrypt program. Some folks, it seems, get the thing resetting after block 4. Yes, well, ahem. Line 210 in the big loader program should have read:

```
210 SAVE "acu",B,&4000,i-&4000
```

Um, that was one of mine. Splat! (sound of wrist being smacked).

Nebulus cheat modes

To stop the clock and get infinite lives, hold down one of the following: Shift+MD or Shift+DP or Shift+CW or Shift+HL. Which of those you have to press is randomly chosen, but pressing the TAB key always restores the game to normal.

Shift+<number> goes to that number tower, and Shift+9 toggles the birdie on and off.

Well that's it for another month, hackfans. Next month is going to be a tricky one 'cos I'm off on holiday in a canal boat. No mains electrickery, you see. I'll try for some stuff on Aliens (including a map, cutting room permitting), Boulder Dash, and other tackle from Mighty Joe Garner. Still, keep 'em coming . . .

Luv, Vax & Suz.

BAD CAT

THE English language consists of some 2,000 or so commonly used words plus a considerably larger number known only to the likes of Frank Muir and company.

In the right hands, they can be selected and ordered so as to produce great works of literature; Hamlet, Great Expectations, Moby Dick and the like.

Choose them at random and sling them together any old how and its as near a certainty as you can get that you will end up with complete and utter gobbledeygook. Inland Revenue tax returns and the demented ravings of the Hairy Hacker are prime examples.

Likewise, few of the many possible permutations of notes on a stave lead to musical works of lasting beauty such as Beethoven's Fifth, White Christmas or Star Trekkin'.

The same reasoning can be applied to computer games. These have been around long enough now for many of the more obvious subjects to have been exploited and re-exploited to the point of nausea. The day of "Bobby Robson's Kung Fu Fighting Demon in the 25th Century On Ice" can't be far off.

In their desperate search for originality, the lads at Rainbow Arts appear to have settled for lobbing a couple of darts into their copy of Every Boy's Bumper Book of Facts and come up with the two subjects of Cats and the Los Angeles Olympics.

This is the only possible explanation that comes to mind when reading the blurb on the packaging of Bad Cat, which informs you that it is 1984 and the dignitaries and celebrities of LA are preparing for the huge crowds which are expected to attend the games.

But there are still the city-dweller cats, despised by all – and no wonder – who are planning their own competitive games.



Bad Cat consists of four independent games linked by a common interlude. Each takes place in a different area of LA. Controls are basic, enabling Bad Cat to walk backwards, forwards, to jump, fall on his knees or somersault.

In the first game, Bad Cat has to cross the city park, avoiding such obstacles as water jumps, circus balls and trampolines. Once across the park, the prize awaits – a motorcycle.

Unfortunately, the keys are hanging on a streetlamp – aren't they always – and the use of a swing is needed to retrieve them before the motorcycle can be mounted with a "sweeping somersault".

Next comes the interlude. Mounted on the motorcycle, you have to cross the city, avoiding the police and the bulldozers that block your path.

This is followed by the arena, in which Bad Cat indulges in some gymnastics, jumping from bumper to bumper to retrieve points-scoring geometric figures that pass above him.

The third game consists of "an exciting adventure in the sewage systems of the city". It is gratifying to know that while in the sewers Bad Cat is prevented from performing a somersault because of the physical conditions.

Finally, Bad Cat enters a pub in which he undertakes a duel with a bulldog consisting of ten pin bowling and beer.

Points scoring is based upon the time taken to complete each game. Additional bonus points are available for skilled play if you gain "the benevolent approval of the judges".

Bad Cat as a game rates no more than average. The skills required are basic and easily mastered; the graphics are adequate but nothing special.

The settings, admittedly, are unusual, but a game needs to involve the player to maintain interest and in this case the overwhelming feeling is one of apathy as to whether you succeed or not.

The most entertaining part of the package is the instructions which have been translated from the original German and show it. This is not a game to get over-excited about.

Author: Rainbow Arts
Price: £9.99 tape £14.99 disc



Nigel

I GET the impression this game was written for very young children. It's not just the fact that the challenge is totally non-existent, but infantile messages pop up now and again as well.

Bad Cat is colourful with nicely drawn graphics, and the disc version probably makes for a better game than the tape, but I can think of better ways to spend 15 quid.

8/20

Liz

WHAT an unfortunate title. I presumed the Bad in Bad Cat meant Bad as in Really Cool. Nope, it means Bad as in Terrible.

The gameplay really is ridiculously simple; just a matter of skipping along jumping over things, jumping on to things, and grabbing or kicking things.

Even if you don't manage to complete the level, you still get to go on to the next level. Ho hum.

8/20

Colin

THIS game is a drag. Each of the four levels are so easily conquered, which is a bit of a let down after waiting thumb-twiddling minutes for it to load. And the motor bike interlude flashes by so quickly that you hardly feel you've done anything.

The graphics are nicely done though, suggesting that the ability was there to make this a better game. I wonder what went wrong?

5/20

CRAZY CARS

THE flag drops. You've got 60 seconds to finish the first stage. You push the gas pedal to the floor. Precious time is lost braking into and accelerating out of the first bend.

Pretty soon the unmistakable rear wings of a distant Lamborghini appear. In no time you are crawling all over the back of it, foot hard on the brake.

Almost without thinking you find yourself thanking providence for automatic gearboxes. Then disaster strikes – the Lamborghini slams his anchors on and you drive right up his exhaust pipe.

Amazingly you're still in the race. No damage has been done, but you've come to a standstill. More precious seconds tick away as you accelerate to 200 mph again.

Ignoring a tight left-hand bend, you keep the gas pedal hard down. Your speed rapidly decreases as you scrape along the line of little blue posts that border both sides of the road like stationary and silent spectators. Again no damage is sustained, your penalty for taking the bend too fast is just the time lost in getting back to top speed.

Around the bend you can see that Lamborghini. Expertly you let your Mercedes drift and slide by it on the outside. Before you have finished congratulating yourself, however, another of the same ilk appears. But you've got the hang of it now.

With the time remaining down to 15 seconds, you wonder how you're ever going to finish this race. Suddenly the words "Soon Time Bonus" flash on the screen as you roar past the invisible Stage 1 finish line. Another 30 seconds have been added. Now you can do it. You know you can.

Neeeeowwww ... Neeeeowwww ... Neeeeowwww ... Three more Lamborghinis bite the dust, and before you know it you're on to Stage 7. The road ripples towards you as you enter a bend and – wahay! – you're up in the air and soaring straight for the grass verge.

You make a mental note to slow down a little next time you see a bump like that on a bend.

Two stages later your silver Mercedes does a slick metamorphosis into a candy blue Porsche 911 Turbo. Your finger twitches uneasily. Do the controls feel different, or are you just imagining it?

A rapid succession of Lambos and bumpy road surfaces hinder your progression. Time is getting short. Palms perspire as a "Game Over" warning lets you know you've got less than 10 seconds to complete the stage.

The clock ticks to zero. But you're still rolling on deceleration, only inches from the stage's finishing line. Three computer cars flash by.

Panic sets in as you put all your weight on the accelerator in a desperate effort to make the line, followed by elation as you pick up another Soon Time Bonus.

With no time to waste you set off in pursuit of the Lambos. Now you're angry, and nothing is going to get in your way. On a long straight you cruise past four of them, two bends later you drift past another. You're making up time fast.

Level 3, and you swap the Porsche for a racing red Ferrari 288 GTO. Things are getting really tough. Every bend seems to have a Lamborghini crawling around it. More seconds tick away as you wait for a chance to slipstream them. You chastise yourself for losing too much time on the previous level.

Half way through Stage 1 on Level 3 you run out of steam, coming to an awkward halt at the side of the road. Never mind, you've scored well over six million points, and this was only your first race.

New York, here you come again...





Author: Titus for Entertainment International Ltd
Price: £9.95 tape, £14.95 disc

Nigel

IF this is an attempt at a serious simulation for each of the cars, then it has failed. For a start, the Porsche and Ferrari have manual gearboxes, and all three cars would have trouble doing 200 mph. I suppose it could be 200 kph, but that's only about 125 mph, which is a trifle on the slow side.

But the name of the game is Crazy Cars, so I suppose the speeds are crazy speeds. But I'm splitting hairs. I'm crazy about this game really.

18/20

Colin

WHAT Crazy Cars lacks in polish it makes up for in sheer playability. And the more you play, the more you notice and appreciate the large number of brilliant little touches.

After a while you don't even mind that the background is the same on each level. It's the race that's important.

The undulating road surface becomes incredibly realistic. When I caught myself stretching my neck in a futile attempt to see over a hill, I knew I was hooked.

18/20

Liz

THE CPC conversion of this French coded racing car game arrives at last. But gone are the three tracks, to be replaced with just one; gone is the prestigious Lamborghini, to be replaced with a mere Mercedes; and gone is the famous Game Over screen, to be replaced with a dreary black and grey high score table.

A pity, because this is a very, very good game.

17/20

SPINDRONE

THE author of Spindrone seems to have discovered the solution to a problem that has bugged governments for years – the way to get rid of plutonium. You simply leave it outside in neat rows and let some aliens take it away.

The setting is the planet Fungii 7, where the only native lifeform is a type of toadstool. As you may know, to colonise a planet you need plutonium, and as you have just colonised Fungii 7 you have tonnes of the stuff lying around in large baked bean tins.

Leaving all this nuclear fuel in nice rows is just too much of a temptation to the unfriendly neighbourhood aliens, who have decided to relieve you of it.

Although the CND supporters among the colonists might be pleased, your bosses aren't. They have given you the task of convincing the nasty Kermatoid aliens that stealing is morally wrong, using the tried and trusted technique of blowing them up. The plot makes all the difference in games like these, doesn't it?

The graphics are large Mode 0, colourful and chunky, moving slowly in a very relaxed manner around the screen.

You might wonder how the programmer manages to scroll such nice graphics, and clearly the programmer did too, because there is no scrolling.

When you get to the edge of the screen it flips to another part of the planet where exactly the same nasty Kermatoids are stealing yet more of your precious cans of nuclear nasty-stuff.

Your "highly manoeuvrable battle droid" – which is actually a dustbin on legs – skids its way left and right and very occasionally, when you remember you can do it, it floats up and down.

The name Spindrone comes from the way that the dustbin rotates as it makes its way around the planet.

The Kermatoids – lumps of green putty with eyes – drift down the screen, ready to grab a can of plutonium. To convince them otherwise, you fire a laser at them.

If you let them grab a can, either through carelessness or through pity because they look so cute, they float back up, and then for no readily apparent reason, drop a rock on you.

As you only have a limited number of nuclear bean cans, this is clearly a Bad Thing, and the game will end if you lose them all. For those cans remaining at the end of each attack wave, you receive a bonus.

Also on the Kermatoids' side are little rockets that make their way from side to side, and generally get in the way. You can explain your viewpoint to these, too, with your lasers.

In later attack waves, life becomes even more complicated with flying saucers buzzing you, springy things bouncing around, and worst of all, the dreaded radio-controlled homing doughnuts that will follow you around and even wait under you if you should float into the air to avoid a low-flying rocket.

It's not easy being a battle droid.

This game uses an old formula revamped with nice graphics, and plays as such; in short a typical budget game. The programmer shows he knows his stuff, and with an original idea might come up with something rather special.

Author: Atlantis Software
Price: £1.99 cass





Nigel

There is no getting away from it, Spindrone is a version of Defender, a game older ones among you might remember.

Spindrone has very pretty graphics and reasonable gameplay, but there is no excitement.

Defender had a wonderful feeling of flying over the planet shooting the Landers, but in Spindrone you just flip from one screen to another, shooting the same aliens which look just a little too cute.

10/20

Colin

Large, colourful Mode 0 graphics make Spindrone instantly a visually pleasing game. But stopping the Kermatoids stealing the cans is what it is all about.

Apart from extra aliens appearing, nothing much changes. Extra features such as a time limit extended by shooting certain aliens, and mushrooms sprouting in the place of stolen bean cans, add a little to the game, but ultimately they are not enough.

12/20

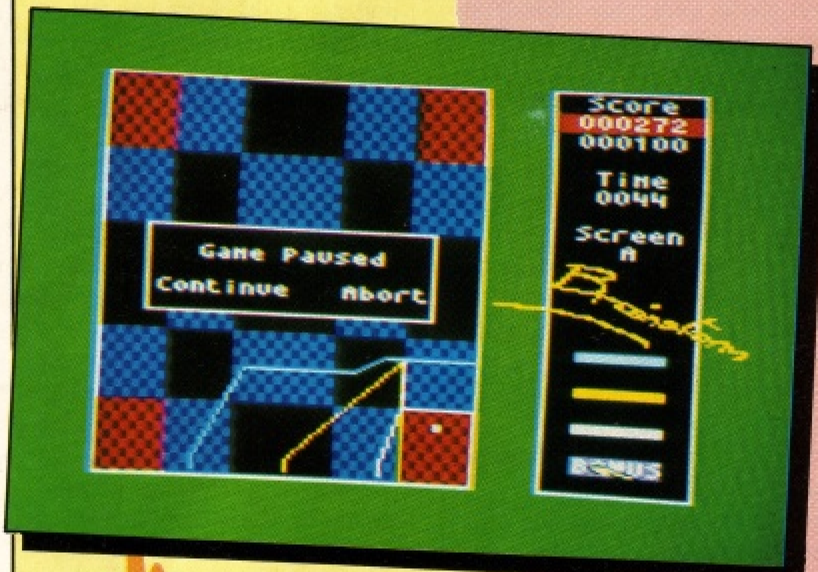
Liz

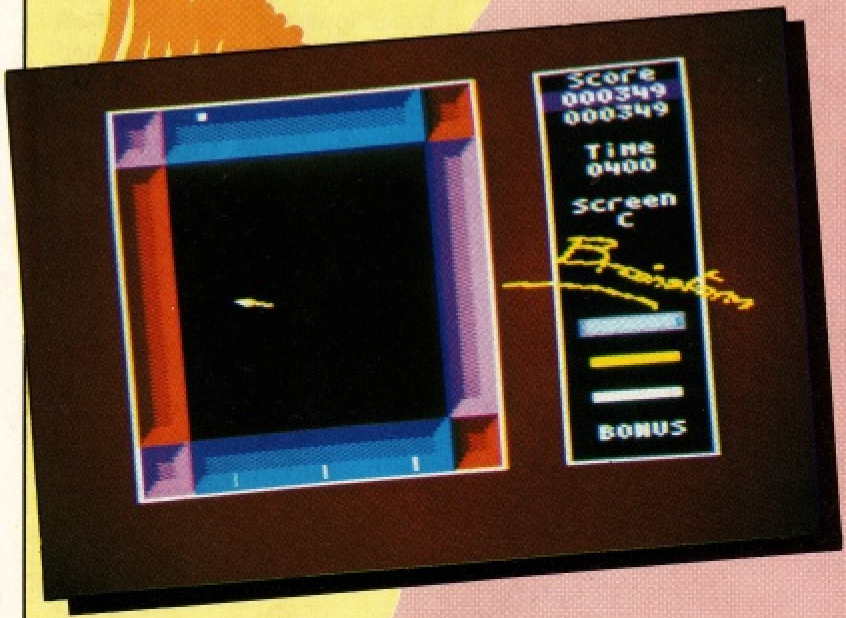
Although you have a little radar scanner that shows you what is going on, it is all too easy to forget about the rest of the planet and concentrate on the section you are currently on. Consequently, I found Spindrone a difficult game to play.

The graphics are nice, though.

10/20

BRAINSTORM





PETE Cooke programmed the highly-acclaimed arcade adventure Tau Ceti and its sequel Academy. He's popped up again on the Firebird Silver Range budget label, collaborating with James Baird to produce Brainstorm.

The game is played on a grid composed of coloured squares. You control three coloured lines, yellow, light blue and white, which are moved about by an arrow.

After clicking an appropriate icon you connect the line to any point on the grid by moving the arrow over that point and pressing Fire.

But the line is of finite length; if you force it to be drawn to a distant point on the grid, part of the line which you drew earlier will be erased.

The purpose of all this line shifting is to try and trap a ball which is bouncing around the screen. The subtle feature is that different coloured squares do different things when the ball passes over them.

Red squares increase your score by one, purple ones decrease your score by one, green ones cause the ball to jump randomly to other parts of the grid.

You start each screen with 100 points, and have 400 time units to play with. You don't necessarily have to trap the ball, but the condition for moving on to the next level is that, when your time runs out, you have more points at the end of the level you are on than you gained on the previous level. If this condition is not satisfied, the game ends.

The key to success is trapping the ball at the correct time on red squares and then using the Bonus icon. When Bonus is selected you are prevented from drawing any more lines, so you can't accidentally set the ball free.

There are 26 screens and a host of options. You can use keyboard, joystick or mouse to control the lines, and you can start on any of five different screens.

There are three skill levels. In increasing order of difficulty, you have three lines to trap one ball, then you have two lines, and finally you have three lines to trap two balls.

The colours are rather loud and the graphics are simple and blocky. But they are adequate, and you are too riveted to the screen to worry about details like that. The omnipresent pointer moves very quickly and smoothly, without a trace of flicker.

Although it's initially a little confusing and difficult to get to grips with, controlling the lines soon becomes second nature. Brainstorm is a good budget title.

Authors: Pete Cooke and James Baird for Firebird Silver
Price: £1.99 tape

Nigel

I HAVE two mice at home. One usually lives in a large cage, and doesn't have a care in the world. The other is connected to my Amstrad, and was terribly bored. (It told me).

Apparently, all it did was help with desktop publishing and other serious programs. Never got any time off for leisure. Until I got Brainstorm. Now it's whizzing around the table with relish.

It's enjoying itself, and so will you.

18/20

Colin

IF you're tired of blowing nasties to bits, Brainstorm will blow the cobwebs from your brain. The philosophy behind it reminds me of Confuzion – lots of thought needed, with the occasional frantic repair job when you find the time limit running low. You will quickly be hooked.

But, oh dear – the game is unplayable with a green screen monitor. The greens, reds and purples are not distinctive enough.

15/20

Liz

CRUDE, blocky graphics, violent colours grabbed straight from the Spectrum's restricted palette – and who cares? A deceptively simple game that is, horribly addictive and also non-violent, which should please many people.

The programmers have certainly taken a bold step in using classical music for the title tune, rather than going for the current trend of producing poor copies of rock music. More strings to their bow!

19/20

SUPER STUNTMAN

THIS is a new budget release from Code Masters. You play the stuntman, your task to complete five different scenes for an all-action movie and remain alive by the end of it.

The scenes are shot in seven different locations, starting off with a car chase in a boulder-strewn desert.

The action switches from there to a high speed power boat race, then to a forest scene, jumping the Grand Canyon, battling it out with street gangs in New York, shooting the rapids in a white water chase and a mystery grand finale, if you get that far.

As if this little set of tasks was not taxing enough, lots of baddies are intent on sending you to that Great Film Studio in the sky.

There are also perils such as land mines and dried out river beds to jump, and all this has to be completed within a given time.

The colourful action is viewed from above while the screen scrolls vertically. Controls are used from the keyboard or joystick; you have the ability to accelerate, decelerate, steer left or right and fire your cannon.

The screen is divided into a fair sized playing area with the right hand side containing the score, time remaining and a damage report. This is represented by an overhead view of a car.

As damage occurs due to minor events such as slamming into another car or scraping along the sides of stone canyons, parts of the car disappear.

Author: Code Masters
Price: £1.99 cass





Nigel

The prompts for the next scene come up, for example, as Take 2 Sceme 2. Given the number of people that worked on this program, how did they all manage to miss such an obvious spelling mistake?

In a way that sums up my feelings about this game. It's 85 per cent there, but the missing 15 per cent spoils the rest of the game for me.

It's a shame because Stuntman has the potential to be good, but it just misses out. A reasonable budget game though – fairly interesting at first, but I'm not sure that it has a lasting appeal.

12/20

DEMON'S REVENGE





ANYONE who's spent a wet Bank Holiday Monday afternoon watching Sir John Gielgud accompanied by Roland Rat and Orville presenting Disney Time knows exactly what happens to errant apprentices who dabble with things that they didn't ought to.

Unfortunately, Merlin Jnr seems to have been unaware of this elementary fact of life; perhaps he preferred The A Team.

Whatever the reason for his ignorance, Merlin Jnr has been a very naughty boy and is now in Big Trouble. Demon's Revenge gives you the chance to help him out.

Butterfingers Merlin has managed to knock over and break four innocent looking jars. If these jars had contained the sorcerer's spare dentures, or his hair gel, or even his auntie's extra strong home made pickled onions, all would have been well; a quick tidy up and no one would have been any the wiser.

But the jars contained the four talismen of Trodor the Demon – wouldn't you just know it – whose evil powers are now free in the castle and up to no good.

Each talisman has broken into four pieces and the only way to stop Trodor is to collect the pieces, and return them to the temples at the top of the castle.

Demon's Revenge is an impressive game requiring a logical, step by step approach. It does not reveal its secrets easily and yet retains enough elements of excitement to satisfy even the most ardent, trigger happy joystick fiend.

Author: Firebird Silver
Price: £1.99 cass

Colin

FINDING your way around the castle while maintaining the optimum combination of keys, spells and objects, fighting off the demons as you go, is roughly equivalent to juggling red hot pokers round the maze at Hampton Court on a busy Sunday afternoon.

The graphics are excellent, and the three dimensional freedom of movement gives the game a realistic feel. A good value game that should maintain a high level of interest and entertainment for some time.

16/20

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VISA

VENOM STRIKES BACK

HOT on the heels of Dan Dare & Co. comes a new brand of space hero . . . Matt Trakker. His purpose is to rescue his son Scott from the clutches of Venom, more commonly known as Miles Mayhem. Matt is helped by Alex Sector, who looks suspiciously like Sean Connery, and his hi-tech masks, monitored by a central computer – your CPC.

You control Matt, and have to fight your way through a large complex of buildings to rescue Scott.

There are four main types of baddies – deathspheres (spiky things like World War I floating mines), blockbusters (cannons, in the spirit of the 1812 Overture), angels of death (which look like common or garden space rockets) and strangely biological and low tech serpents.

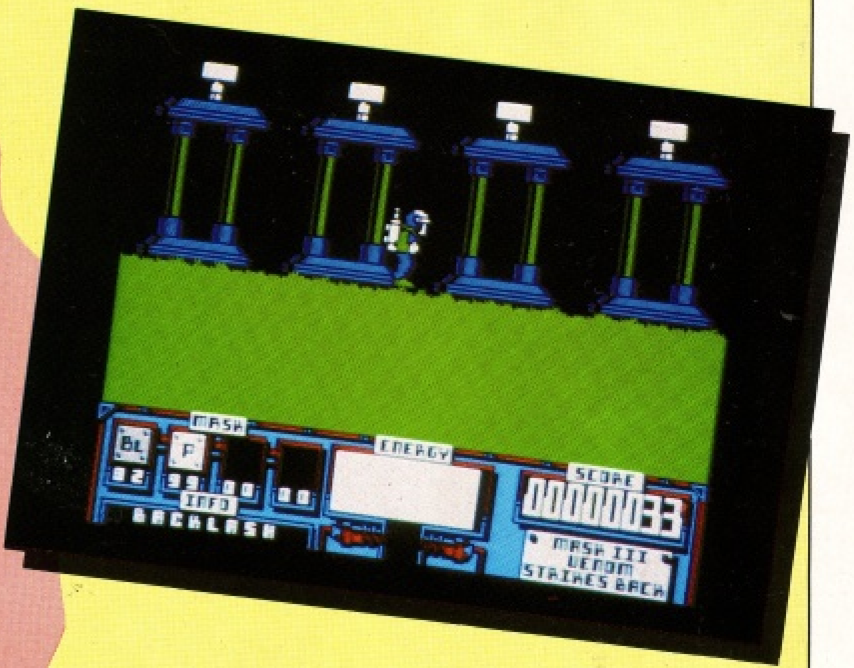
On your travels you can pick up any one of four types of mask. As long as you have that mask you can select it. Then pressing Fire either dematerialises you and protects you from the baddies or gives you ammunition to fire at them. Each mask can be used 99 times before it has to be replaced.

As well as dodging flying and exploding objects, you have to negotiate natural hazards. These include areas of water which slosh about very realistically and in which you will drown if you fall in, and fast-moving bridges which you can easily fall off.

There are also bouncy objects which can sometimes be shot, but are probably best avoided as they drain your energy.

Lying around are teleportation stations. If you jump into one you will be transported to another level.

This may sound like just another platform game, but it is a cut above that because of the animation, which must rank among the best ever seen on the Amstrad.





Probably the most remarkable feature is the feeling of depth. Although the game is only two-dimensional, moving objects will pass behind some things and in front of others.

A spectacular example of this is on a screen which contains several Greek-style pillars and a centipede. The centipede moves behind one pillar and in front of the next at high speed. This has to be seen to be appreciated.

Backgrounds are detailed and colourful, with everything present from multicoloured spacesuits and rotating gyroscopes to views of the Moon and mountain ranges. There is no problem for green screen users.

You are given a password whenever you complete a series of levels. Type it in at the start of the next game and then skip all the levels you completed previously. Nice.

In fact, it's great stuff – just the sort of program that looks nice on the coffee table when Spectrum owners call for tea.

Author: Gremlin Graphics
Price: £9.99 tape £14.99 disc

Nigel

MANY years ago I bought Jet Set Willy as my first Amstrad program, believing then that it was the greatest creation since Alan Sugar himself. Well, Venom Strikes Back is now, what I thought JSW was then.

The animation is some of the best I've seen on the Amstrad, and I'm pretty sure some 16 bit computers would be pushed to better it.

18/20

Colin

ZEBEDEE, Dougal, Andy Pandy, Captain Pugwash and friends seem prehistoric when compared with today's cartoon characters. I've no idea about the quality of the cartoon (I'm a bit old to watch that sort of thing), but Venom Strikes Back certainly is excellent stuff.

Lovely graphics, easy control and terribly addictive. Who said dodging the nasties was old hat? Pass the matchsticks.

18/20

Liz

I OPENED the box and what did I see? Cartoons (in English, with French subtitles for the linguists). Not a promising start, bearing in mind some of the less successful cartoon spinoffs I've seen.

However, it turned out to be Pandora's box (cracked plastic version), with a terrific game inside. After a few games I was hooked, although I kept falling off my chair each time I saw the waves.

18/20



PROFESSIONAL Lawnmower Simulator, or PLS as we have come to call it, is a race against time to get the lawn cut before lunch. If you manage it you can reward yourself with a cool dip in the pool. Full playing instructions are included in the game.

To gain extra colour, this Mode 1 game has made clever use of a previous *ACU* listing for the CPC, Multimode by Cliff Lawson.

There's nothing more boring than watching grass grow – so get out there and mow it!

Professional Lawnmower Simulator

A game in Basic for the CPC by J.Dixon

```
10 MODE 1:DEFINT a-z:SYMBOL AFTER 238
20 INK 0,9:INK 1,26:INK 2,0:INK 3,6:BO
   RDER 9:PAPER 0
30 LOCATE 4,2:PEN 3:PRINT"PROFESSIONAL
    LAWNMOWER SIMULATOR"
40 LOCATE 15,4:PRINT"by J.Dixon"
50 LOCATE 2,8:PEN 1:PRINT"Incorporatin
   g Cliff Lawson's Multimode"
60 LOCATE 15,15:PEN 3:PRINT"Please Wai
   t
70 '
80 MEMORY &9FFF:a!=&A000
90 FOR lin=180 TO 990 STEP 10
100 csum=0:FOR byte=1 TO 8
110 READ a$:b=VAL("&"+a$)
120 csum=csum+b:POKE a!,b:a!=a!+1:NEXT
130 READ sum:IF sum<>csum THEN 160 ELS
    E NEXT
140 CALL &A000:GOTO 1010
150 '
160 PRINT"Cheksum error in line";lin:S
    TOP
170 '
180 DATA 21,07,a2,01,09,a0,c3,d1, 776
190 DATA bc,14,a0,c3,2a,a0,c3,b7, 1143
200 DATA a0,c3,d5,a0,4d,4f,44,45, 1021
210 DATA d3,4e,4f,52,4d,41,cc,49, 869
220 DATA 4e,4b,d3,00,21,17,a1,c3, 776
230 DATA 00,a1,fe,04,20,f6,cd,ca, 1104
240 DATA a0,21,01,a2,36,00,11,02, 429
250 DATA a2,01,05,00,ed,b0,06,06, 593
260 DATA 21,05,a2,dd,7e,00,77,2b, 709
270 DATA dd,23,dd,23,10,f5,3a,02, 833
280 DATA a2,32,01,a2,3a,05,a2,32, 650
290 DATA 06,a2,3e,c9,32,eb,bd,3e, 967
300 DATA 00,32,00,a2,06,14,cd,19, 468
310 DATA bd,10,fb,21,f7,a1,06,81, 1032
320 DATA 11,76,a0,c3,e0,bc,3a,00, 960
330 DATA a2,3c,fe,06,32,00,a2,20, 726
340 DATA 04,af,32,00,a2,f5,21,01, 670
350 DATA a2,16,00,5f,19,7e,cd,1c, 663
360 DATA bd,f1,cd,99,a0,cd,25,bd, 1379
370 DATA c9,fe,06,30,14,5f,cb,27, 866
380 DATA cb,27,cb,27,cb,27,83,21, 890
390 DATA 0b,a2,16,00,5f,19,e5,d1, 753
400 DATA c9,21,ab,a1,c3,00,a1,f5, 1167
410 DATA cd,ca,a0,f1,b7,20,05,3e, 1090
420 DATA 02,c3,0e,bc,dd,7e,00,c3, 941
430 DATA 0e,bc,3e,c3,32,eb,bd,21, 966
440 DATA f7,a1,c3,e6,bc,b7,28,22, 1278
450 DATA 47,cb,27,3d,dd,e5,e1,5f, 1144
460 DATA 16,00,19,2b,7e,e5,cd,99, 803
470 DATA a0,e1,05,2b,2b,7e,fe,1b, 883
480 DATA 30,04,cd,0a,a1,12,13,10, 481
490 DATA f2,c9,21,52,a1,c3,00,a1, 1075
500 DATA 7e,fe,24,c8,23,cd,5a,bb, 1133
510 DATA 18,f6,e5,d5,5f,16,00,21, 862
520 DATA 71,a2,19,7e,d1,e1,c9,0a, 1071
```

```
530 DATA 7c,4d,4f,44,45,53,2c,6d, 653
540 DATA 31,2c,6d,32,2c,6d,33,2c, 500
550 DATA 6d,34,0d,0a,0a,73,65,74, 526
560 DATA 73,20,74,68,65,20,6d,6f, 720
570 DATA 64,65,20,66,6f,72,20,34, 644
580 DATA 20,76,69,73,69,62,6c,65, 782
590 DATA 20,73,65,63,74,69,6f,6e, 789
600 DATA 73,24,0a,7c,49,4e,4b,53, 594
610 DATA 2c,73,2c,62,2c,69,30,2c, 542
620 DATA 2e,2e,2c,69,31,35,0d,0a, 366
630 DATA 0a,73,65,74,73,20,74,68, 709
640 DATA 65,20,62,6f,72,64,65,72, 771
650 DATA 20,28,62,29,20,61,6e,64, 550
660 DATA 20,69,6e,6b,73,20,28,69, 646
670 DATA 30,20,75,70,20,74,6f,0d, 581
680 DATA 0a,69,31,35,29,20,66,6f, 503
690 DATA 72,20,73,65,63,74,69,6f, 793
700 DATA 6e,20,73,20,28,30,2e,2e, 469
710 DATA 35,29,24,0a,41,72,65,20, 452
720 DATA 79,6f,75,20,73,75,72,65, 828
730 DATA 2c,20,6d,79,20,6d,75,6d, 673
740 DATA 20,61,6c,77,61,79,73,20, 721
750 DATA 74,6f,6c,64,20,6d,65,0d, 690
760 DATA 0a,74,68,61,74,20,73,65, 691
770 DATA 63,74,69,6f,6e,20,6e,75, 800
780 DATA 6d,62,65,72,73,20,77,65, 789
790 DATA 72,65,20,66,72,6f,6d,20, 715
800 DATA 30,20,74,6f,20,35,24,00, 428
810 DATA 00,00,00,00,00,00,00,00, 0
820 DATA 01,00,00,00,00,00,00,00, 1
830 DATA 00,00,00,0c,14,12,0c,15, 83
840 DATA 00,02,03,04,05,06,07,0a, 37
850 DATA 0b,0c,0d,0e,0e,14,12,0c, 114
860 DATA 15,00,02,03,04,05,06,07, 48
870 DATA 0a,0b,0c,0d,0e,0a,14,12, 108
880 DATA 0c,15,00,02,03,04,05,06, 53
890 DATA 07,0a,0b,0c,0d,0e,12,14, 105
900 DATA 12,0c,15,00,02,03,04,05, 65
910 DATA 06,07,0a,0b,0c,0d,0e,15, 94
920 DATA 14,12,0c,15,00,02,03,04, 80
930 DATA 05,06,07,0a,0b,0c,0d,0e, 78
940 DATA 0d,14,12,0c,15,00,02,03, 89
950 DATA 04,05,06,07,0a,0b,0c,0d, 68
960 DATA 0e,14,04,15,1c,18,1d,0c, 152
```

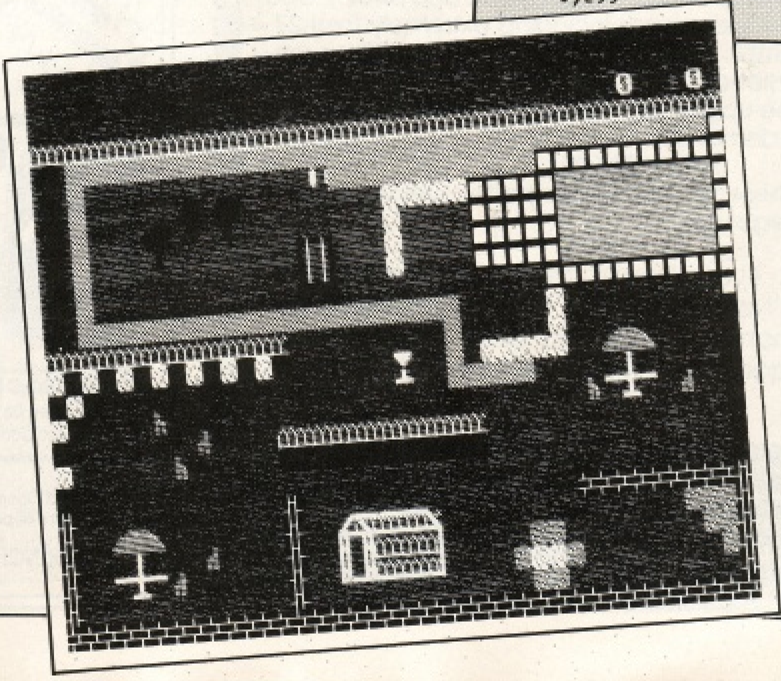
```
970 DATA 05,0d,16,06,17,1e,00,1f, 130
980 DATA 0e,07,0f,12,02,13,1a,19, 126
990 DATA 1b,0a,03,0b,00,00,00,00, 51
1000
1010 ON BREAK GOSUB 3090
1020 DIM b(40,25)
1030 GOSUB 1810
1040 ENV 1,5,-3,30
1050 GOSUB 2890
1060 WINDOW #1,1,33,1,3:CLS #1
1070 WINDOW #2,34,40,1,2:CLS #2
1080 WINDOW #3,1,40,3,25:CLS #3
1090 FOR y=1 TO 25:FOR x=1 TO 40:b(x,y
     )=0:NEXT:NEXT
1100 RESTORE 1810
1110 |MODES,1,1,1,1:PAPER 1
1120 FOR i=0 TO 5:|INKS,i,9:NEXT
1130 |INKS,1,99,9,26,3,20
1140 |INKS,2,99,9,26,3,20
1150 |INKS,3,99,9,26,17,2
1160 |INKS,4,99,9,26,6,24
1170 GOSUB 2080
1180 x=24:y=15:d=1:z=521
1190 EVERY 300 GOSUB 1730
```

```
1200 EVERY 5,1 GOSUB 1790
1210 REM ***** MAIN LOOP
1220 EI
1230 LOCATE x,y:PEN 0:PRINT CHR$(22)CH
     R$(0)CHR$(207):IF b(x,y)=0 THEN z
     =z-1
1240 b(x,y)=1
1250 IF z=0 THEN g=g+1:DI:GOTO 1600
1260 IF d=1 THEN x=x+1:m$=CHR$(251)
1270 IF d=2 THEN x=x-1:m$=CHR$(252)
1280 IF d=3 THEN y=y-1:m$=CHR$(249)
1290 IF d=4 THEN y=y+1:m$=CHR$(250)
1300 IF b(x,y)<2 THEN 1510
1310 p=1:q=1
1320 re=REMAIN(0):re=REMAIN(1)
1330 SOUND 2,302,150,1,1,0,5
1340 IF b(x,y)=2 THEN g$="wall":c=20
1350 IF b(x,y)=3 THEN g$="path":c=10
1360 IF b(x,y)=4 THEN g$="flower bed":
     c=5
1370 IF b(x,y)=5 THEN g$="bushes":c=5
1380 IF b(x,y)=6 THEN g$="fence":c=15
1390 IF b(x,y)=7 THEN g$="greenhouse":
     c=30
1400 IF b(x,y)=8 THEN g$="swing":c=15
```

```
1410 IF b(x,y)=9 THEN g$="umbrella":c=
     10
1420 IF b(x,y)=10 THEN g$="chair":c=5
1430 IF b(x,y)=11 THEN g$="birdbath":c
     =10
1440 PEN #1,1:PRINT #1,"You hit the "g
     $
1450 LOCATE #1,1,2:PRINT #1,"Repair th
     e damage and mend mower
1460 LOCATE #1,1,3:PRINT #1,"Lose"c"mi
     nutes
1470 IF d=1 THEN x=x-1
1480 IF d=2 THEN x=x+1
1490 IF d=3 THEN y=y+1
1500 IF d=4 THEN y=y-1
1510 LOCATE x,y:PEN 1:PRINT CHR$(22)CH
     R$(1)m$:FOR i=1 TO 100:NEXT
1520 IF p=1 THEN m=m+c:GOSUB 1740
1530 IF INKEY(27)=0 THEN p=0:d=1
1540 IF INKEY(34)=0 THEN p=0:d=2
1550 IF INKEY(69)=0 THEN p=0:d=3
1560 IF INKEY(71)=0 THEN p=0:d=4
1570 IF p=1 THEN 1530
1580 IF q=1 THEN q=0:GOTO 1190
```

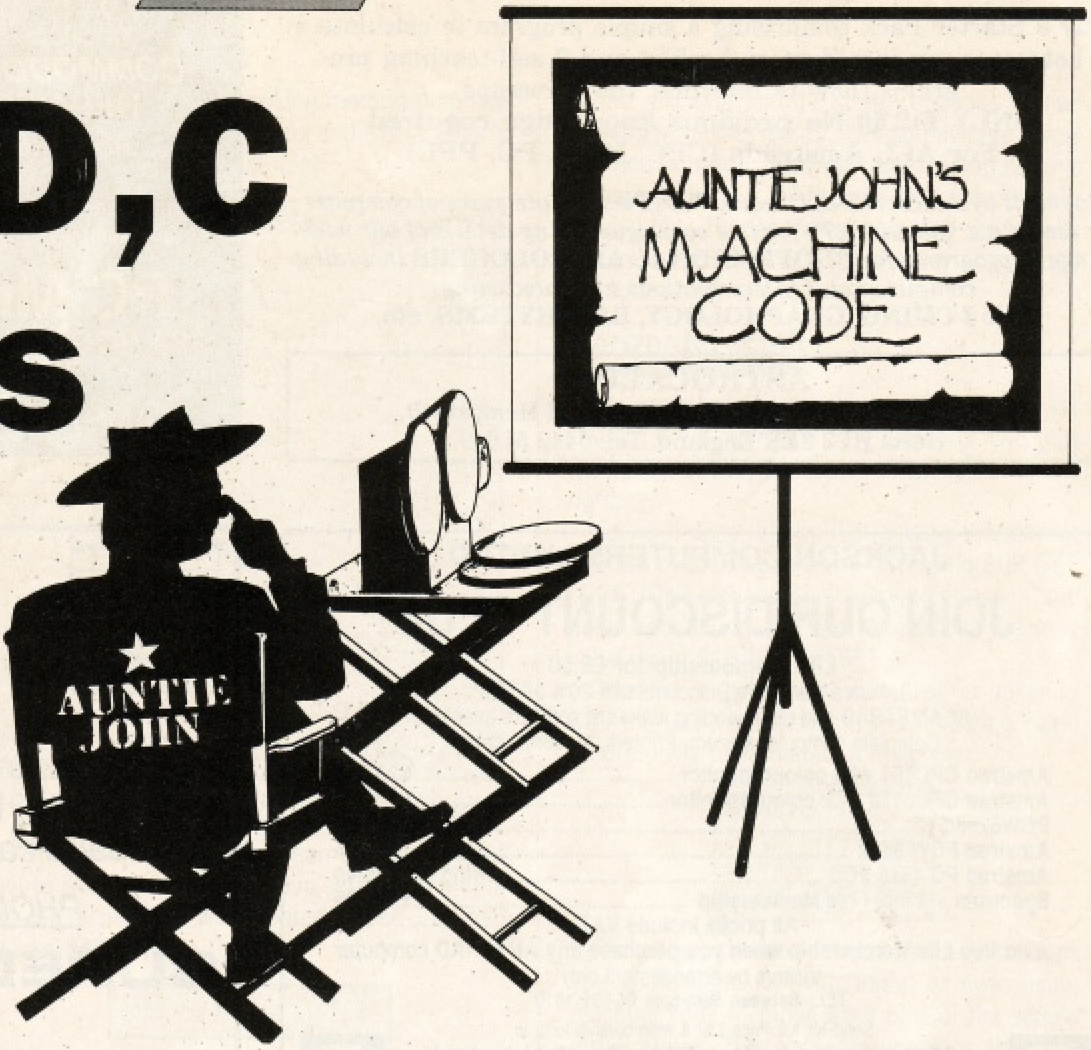
```
1590 GOTO 1220
1600 REM ***** PLAY AGAIN
1610 re=REMAIN(0):re=REMAIN(1)
1620 FOR i=1 TO 1500:NEXT
1630 CLS #1:CLS #2:CLS #3
1640 |NORMAL,1
1650 PRINT CHR$(22)CHR$(1)
1660 IF h<2 THEN LOCATE 7,9:PEN 2:PRIN
     T"Well Done! You get your swim" E
     LSE LOCATE 5,9:PEN 2:PRINT"Sorry,
     lunch is ready - no swim"
1670 CALL &BB03
1680 LOCATE 13,18:PRINT"Play again (y/
     n)"
```

```
1690 IF INKEY(43)=0 THEN 1060
1700 IF INKEY(46)=0 THEN END
1710 GOTO 1690
1720 REM ***** UPDATE SCORE
1730 m=m+1
1740 IF m>59 THEN h=h+1:m=m-60
1750 CLS #2
1760 PEN #2,2:PRINT #2,h; USING"###";m
1770 IF p=1 THEN FOR i=1 TO 2500:NEXT:
     CLS#1
1780 RETURN
1790 SOUND 1,3800,10,5,0,0,21:RETURN
1800 REM ***** GRAPHICS DATA
1810 SYMBOL 238,3,7,15,31,15,31,13,29
1820 SYMBOL 239,224,248,240,252,248,24
     0,176,216
1830 SYMBOL 240,255,129,129,129,129,12
     9,129,255
1840 SYMBOL 241,126,247,221,255,187,24
     7,221,110
1850 SYMBOL 242,223,223,0,251,251,0,22
     3,223
1860 SYMBOL 243,0,3,15,31,63,127,255,2
     55
1870 SYMBOL 244,0,192,240,248,252,254,
     255,255
1880 SYMBOL 246,219,219,195,219,219,24
     ,219,219
1890 SYMBOL 247,3,1,1,1,1,1,2,0
1900 SYMBOL 248,128,128,128,128,128,12
     8,192,0
1910 SYMBOL 249,62,127,62,8,8,8,8,62
1920 SYMBOL 250,62,8,8,8,8,62,127,62
1930 SYMBOL 251,2,135,135,255,135,135,
     2,0
1940 SYMBOL 252,64,225,225,225,225,225
     ,64,0
1950 SYMBOL 253,0,34,85,136,136,136,13
     6,255
```



```
1960 SYMBOL 254,8,8,8,8,8,8,8,8
1970 SYMBOL 255,16,16,16,16,16,16,16,1
     6
1980 h$=CHR$(238)+CHR$(239)
1990 t$=CHR$(247)+CHR$(248)
2000 r$=CHR$(253):f$=CHR$(208)
2010 j$=CHR$(209):k$=CHR$(210)
2020 p$=CHR$(211)
2030 u$=CHR$(243)+CHR$(143)+CHR$(244)
2040 c$=CHR$(150)+CHR$(8)+j$
2050 d$=p$+CHR$(8)+CHR$(156):RETURN
2060 REM ***** SET UP SCREEN
2070 REM ***** Wall
2080 PRINT CHR$(22)CHR$(0)
2090 y=25:FOR x=40 TO 1 STEP -1:GOSUB
     2770:NEXT
2100 y=20:FOR x=31 TO 39:GOSUB 2770:NE
     XT
2110 x=1:FOR y=20 TO 24:GOSUB 2760:NEX
     T
2120 x=40:FOR y=20 TO 24:GOSUB 2760:NE
     XT
2130 x=14:FOR y=20 TO 24:GOSUB 2760:NE
     XT
2140 REM ***** Pool
2150 x=40:FOR y=5 TO 12:GOSUB 2790:NEX
     T
2160 y=6:FOR x=30 TO 39:GOSUB 2790:NEX
     T
2170 FOR y=7 TO 10:FOR x=26 TO 30:GOSU
     B 2790:NEXT:NEXT
2180 y=11:FOR x=30 TO 39:GOSUB 2790:NE
     XT
2190 FOR y=7 TO 10:LOCATE 31,y:PEN 3:P
     RINT STRING$(9,CHR$(143)):NEXT
2200 REM ***** Bushes
2210 PRINT CHR$(22)CHR$(1)
2220 FOR x=9 TO 12:b(x,7)=5:NEXT:LOCAT
     E 9,7:PEN 2:PRINT h$h$
2230 FOR x=7 TO 12:b(x,8)=5:NEXT:LOCAT
     E 7,8:PRINT h$t$t$
2240 FOR x=7 TO 8:b(x,9)=5:NEXT:LOCATE
      7,9:PRINT t$
2250 FOR y=5 TO 12:LOCATE 1,y:PRINT h$
     :b(2,y)=5:NEXT
2260 REM ***** Swing
2270 FOR x=16 TO 17:FOR y=9 TO 11:b(x,
     y)=8:NEXT:NEXT
2280 LOCATE 16,9:PRINT f$f$
2290 FOR y=9 TO 11:LOCATE 16,y:PRINT p
     $j$:NEXT
2300 LOCATE 16,11:PRINT CHR$(130)CHR$(
     129)
2310 FOR y=9 TO 10:LOCATE 16,y:PEN 1:P
     RINT CHR$(254)CHR$(255):NEXT
2320 REM ***** Greenhouse
2330 FOR x=17 TO 22:FOR y=21 TO 23:b(x
     ,y)=7:NEXT:NEXT
2340 LOCATE 17,21:PEN 1:PRINT CHR$(204
     )CHR$(205)
2350 LOCATE 18,21:PRINT STRING$(4,f$)C
     HR$(205)
2360 LOCATE 17,21:PRINT STRING$(6,k$)
2370 LOCATE 18,21:PRINT STRING$(5,r$)
2380 FOR y=22 TO 23:LOCATE 17,y:PRINT
     p$j$:NEXT
2390 FOR y=22 TO 23:LOCATE 22,y:PRINT
     j$:NEXT
2400 LOCATE 17,23:PRINT STRING$(6,k$)
2410 FOR y=22 TO 23:LOCATE 17,y:PRINT
     CHR$(157)CHR$(151)STRING$(4,r$):N
     EXT
2420 REM ***** Fence
2430 y=4:FOR x=1 TO 40:GOSUB 2800:NEXT
2440 y=13:FOR x=1 TO 14:GOSUB 2800:NEX
     T
2450 y=17:FOR x=14 TO 25:GOSUB 2800:NE
     XT
2460 REM ***** Birdbath
2470 LOCATE 21,14:PRINT CHR$(245):b(21
     ,14)=11
2480 LOCATE 21,15:PRINT CHR$(155):b(21
     ,15)=11
2490 REM ***** Flowers
2500 w=1:FOR i=1 TO 20:GOSUB 2810:NEXT
2510 y=14:FOR x=1 TO 13 STEP 2:GOSUB 2
     820:NEXT
2520 w=2:FOR i=21 TO 25:GOSUB 2810:NEX
     T
2530 y=14:FOR x=2 TO 14 STEP 2:GOSUB 2
     820:NEXT
2540 y=18:FOR x=14 TO 25:GOSUB 2820:NE
     XT
2550 x=40:FOR y=13 TO 19:GOSUB 2820:NE
     XT
2560 w=3:FOR i=26 TO 37:GOSUB 2810:NEX
     T
2570 REM ***** Umbrellas and Chairs
2580 FOR x=33 TO 35:b(x,14)=9:NEXT:LOC
     ATE 33,14:PEN 3:PRINT u$
2590 LOCATE 32,16:PRINT d$:b(32,16)=10
     :LOCATE 37,16:PRINT c$:b(37,16)=1
     0
2600 LOCATE 7,16:PRINT d$:b(7,16)=10:L
     OCATE 8,18:PRINT d$:b(8,18)=10:LO
     CATE 9,17:PRINT c$:b(9,17)=10
2610 LOCATE 9,22:PRINT c$:b(9,22)=10:L
     OCATE 7,23:PRINT c$:b(7,23)=10
2620 FOR x=4 TO 6:b(x,21)=9:NEXT:LOCAT
     E 4,21:PRINT u$
2630 FOR y=15 TO 16:LOCATE 34,y:PEN 1:
     PRINT CHR$(149):b(34,y)=9:NEXT
2640 FOR x=33 TO 35:b(x,16)=9:NEXT:LOC
     ATE 33,16:PRINT STRING$(3,f$)
2650 LOCATE 34,16:PRINT k$
2660 FOR y=22 TO 23:LOCATE 5,y:PRINT C
     HR$(149):b(5,y)=9:NEXT
2670 FOR x=4 TO 6:b(x,23)=9:NEXT:LOCAT
     E 4,23:PRINT STRING$(3,f$)
2680 LOCATE 5,23:PRINT k$
2690 REM ***** Scoreboard
2700 IF h=j AND m<k THEN j=j:k=m
2710 IF g<2 OR h<j THEN j=h:k=m
2720 h=0:m=0
2730 PEN #2,2:PRINT #2,h; USING"###";m
2740 LOCATE 34,3:PEN 1:PRINT j; USING
     "###";k
2750 LOCATE 24,15:PRINT CHR$(251):RETU
     RN
2760 LOCATE x,y:PRINT CHR$(246):GOTO 2
     780
2770 LOCATE x,y:PEN 2:PRINT CHR$(242);
2780 b(x,y)=2:RETURN
2790 LOCATE x,y:PEN 2:PRINT CHR$(240):
     b(x,y)=3:RETURN
2800 LOCATE x,y:PRINT r$:b(x,y)=6:RETU
     RN
2810 READ x,y
2820 LOCATE x,y:PEN w:PRINT CHR$(241):
     b(x,y)=4:RETURN
2830 DATA 21,7,22,7,23,7,24,7,25,7,21,
     8,21,9,21,10
2840 DATA 26,14,27,14,28,14,29,14,30,1
     4,30,13,30,12
2850 DATA 2,15,1,16,1,18,28,23,29,23
2860 DATA 1,15,3,15,2,16,1,17,1,19
2870 DATA 28,22,29,22,27,23,30,23,28,2
     4,29,24
2880 DATA 37,21,38,21,39,21,38,22,39,2
     2,39,23
2890 REM ***** INSTRUCTIONS
2900 CLS:|NORMAL,1
2910 LOCATE 4,1:PEN 3:PRINT"PROFESSION
     AL LAWNMOWER SIMULATOR"
2920 LOCATE 15,4:PEN 2:PRINT"Instructi
     ons
2930 LOCATE 1,6:PRINT"It's a lovely Su
     nday morning and you arelonging f
     or a swim in your new pool      be
     fore lunch.
2940 PRINT:PRINT"However, having paid
     for the pool you   cannot afford
     a gardener so must mow    your la
     wn first.
2950 PRINT:PRINT"Luckily you have a mo
     tor mower so you   don't have to
     push it, only guide it, sobe care
     ful it doesn't run away with you.
     You lose time if you hit any obst
     acles.
2960 PRINT:PRINT"If you complete the j
     ob within 2 hours  you get your s
     wim.
2970 LOCATE 15,24:PRINT"PRESS A KEY
2980 a$=INKEY$:IF a$="" THEN 2980
2990 CLS:LOCATE 1,1:PRINT"Use keys:-
3000 LOCATE 17,3:PRINT"a - up
3010 LOCATE 17,5:PRINT"z - down
3020 LOCATE 17,7:PRINT"o - left
3030 LOCATE 17,9:PRINT"p - right
3040 LOCATE 1,12:PRINT"The mower stops
      itself when all the    grass is
      cut. If you think you've      f
     inished and the mower knows you h
     aven'tyou must look for the trick
     y bits you'vemissed.
3050 PRINT:PRINT"Your time is shown to
     p right with the   time to beat u
     nderneath.
3060 LOCATE 11,23:PRINT"PRESS A KEY TO
      START
3070 a$=INKEY$:IF a$="" THEN 3070
3080 RETURN
3090 PEN 2:PAPER 0
3100 |NORMAL,1:END
```

The LD,C scrolls



The screenplay continues. Cue part three of AJ's vade-mecum to the Firmware Guide

I SAID at the end of last month's column that we would look at some arithmetic. I hate arithmetic, don't you? Good, why don't we look at something else instead.

A glance through the wondrous Soft 968 – available from all good stockists – reveals quite a large section on what is called the Screen Pack. This area of firmware deals with the cassette operating system. No, only joking, it deals with the screen of course.

The Screen Pack firmware calls occur between &BBFF and &BC62. They cover everything from changing the screen mode to drawing lines, so let's have a look at some of the more interesting ones. Remember, you will need an Amsdos assembler to run the machine code programs listed hereabouts. Well, that is a lie too, because Basic programs that poke the code into memory are listed. But this is the last time!

> Sorry, but my assembly listings got well and truly zapped last month. I'll kill that cat. If you would like correct copies of the original listings, please send a stamped addressed envelope to:
>
> **Auntie John's listings,**
> **Amstrad Computer User,**
> **169 Kings Road,**
> **Brentwood,**
> **Essex CM14 4EF**

Panic button

The first call that merits our attention is SCR RESET (&BC02). This routine will return the screen colours and flash rates to normal.

How many times have you been experimenting with ink values and got yourself in a total mess with everything flashing bright pink and purple? No, I must admit I haven't done that either – but if I was going to, I would enter this Basic program line first:

```
KEY 128,chr$(13)+"call &bc02"+chr$(13)
```

Then, whenever I got into difficulty, all I would have to do is press function key f0 to restore normality.

Cardboard monitors

From the panic button call, we turn to the infinitely more interesting SCR SET OFFSET, which resides at &BC05, and its two friends SCR SET BASE and SCR GET LOCATION at &BC08 and &BC0B respectively. These routines tell the hardware of the computer to look at a different part of ram for the start of screen memory.

Imagine that the computer's ram is a large sheet of white paper (have a few drinks first if it helps). Then the hardware screen logic is like a piece of cardboard with a rectangular hole cut in it. When it sits on top of the white paper, what is seen through the hole – the screen memory – appears on the monitor.

Normally the cardboard is sitting right at the top of the paper, stretching from address &C000 to &FFFF, but by using the above calls we can move the cardboard cutout to a new position virtually instantaneously.

What we do is scroll the screen very quickly or shift it to a completely new area in ram to make a picture appear instantly.

This is good fun, but it's easy to get both the computer and yourself very confused; you may even lose the screen image somewhere in ram and not get anything displayed. It is, of course, totally impossible to damage the computer in any way by experimenting like this. If things get out of control, simply switching the computer off then on again will return everything to normal.

To make this a practical demonstration, first save a screen display to disc or tape. A pretty picture would be best, say a portrait of Fiona, or a view of the sun setting behind some mountains

```
org &8000               ;Start of assembly.

scr_set_base equ &bc08

ld a,&40
call scr_set_base
ret

ld a,&c0
call scr_set_base
ret

end                     ;End of assembly.
```

```
100 'Basic poker
110 MEMORY &3FFF
120 a=&4000
130 READ b$
140 IF b$="*" THEN 180
150 POKE a,VAL("&"+b$)
160 a=a+1
170 GOTO 130
180 PRINT "Code installed":END
190 DATA 3e,40,cd,08,bc,c9
200 DATA 3e,c0,cd,08,bc,c9
210 DATA *
```

Listing I: Program to shift the screen base address

from within a forest glade. What do you mean you don't have any pictures like that? You have an art package don't you?

OK. If you don't have any nice pictures, draw some squiggles with PLOT and DRAW statements, and save it with:

```
SAVE "!picture",B,&C000,&4000
```

It is very important that you use a MODE statement at the beginning of the program to generate your screen to make sure that no scrolling has taken place. If the screen is scrolled its start address is moved in memory and no longer starts at &C000, the address we have saved it from.

So we now have a screen file – all 16k of it – stored away on tape or disc. Now we need a program to shift the screen base address from its

```
org &4000            ;Start of assembly.

hw_roll equ &bc4d
wait_frame equ &bd19
encode_ink equ &bc2c

ld b,10              ;Loop counter.

 .loop
push bc
ld a,3               ;See text about
call encode_ink      ;this bit.
ld b,1               ;Scroll up.
call hw_roll
call wait_frame      ;Anti-flicker.
pop bc
djnz loop            ;B=B-1,
                     ;if B<>0 goto loop.
ret                  ;Return to Basic.
end                  ;End of assembly.
```

Listing III: Example hardware scrolling program

normal value of &C000 to the new value we are going to use of &4000.

Listing I is the assembler to do this. Notice that it is not assembled between &4000 and &7FFF because this is where the new screen display will be.

Look carefully at the listing. There are in fact two small programs: The first will move the screen to &4000 and the second will restore it to &C000.

The way the hardware works means that the screen must be in a nice neat 16k block, so we have the following alternatives for the screen base:

a) &0000 to &3FFF
b) &4000 to &7FFF
c) &8000 to &BFFF
d) &C000 to &FFFF

Options (a) and (c) both overlap some essential operation system workspace, so we are limited in our choice of screen bases to &4000 and &C000.

The routine SCR SET BASE knows that we only have four choices, so instead of having to give it a two byte address (&4000) we only need tell it the most significant byte (&40).

Now assemble Listing I. As a present to those struggling bravely on without an assembler, a Basic program that will poke the machine code into memory is supplied. Come to think of it, in this case the program is so small that its probably easier to use the Basic poking method than use as assembler. Stop sniggering at the back. This is a rare case – get an assembler!

```
org &4000            ;Start of assembly.

scr_set_ink equ &bc32
scr_set_border equ &bc38
scr_set_flashing equ &bc3e

ld a,1
ld b,6
ld c,18
call scr_set_ink

ld bc,0
call scr_set_border

ld h,1
ld l,1
call scr_set_flashing

ret

end                  ;End of assembly.
```

Listing IV: Example ink, border and flashing program

With the machine code in memory, and HIMEM set to &3FFF or below, we can safely load in the screen display that we prepared earlier. Just load it into &4000, thus:

```
LOAD "!picture",&4000
```

Tape users can grab some well earned sleep during this process.

Right, now the exciting bit. Get rid of the Basic program (if you used it) by typing NEW, then enter, save, and run the following short program.

```
10 MODE 1
20 CALL &8000
30 IF INKEY$<>" "THEN 30
40 CALL &8006
50 END
```

Isn't it simply amazing? No funny horizontal bands, just zap! and the screen appears. If your screen seems messed up, then somewhere along the line a scroll occurred and corrupted the addresses, or you might have to use a different value in line 10, depending on which mode your picture was drawn in. If you get it wrong, things will look rather strange.

Horizontal scroll

That was changing the screen base in vast chunks. If we change it only a byte or two at a time, we can shift the screen to the left or to the right.

Listing II does this by first getting the current address of the screen base – by using SCR GET LOCATION – changing it depending on a key press and telling the hardware about the new value using SCR SET OFFSET.

Once the program has assembled (or poked in with the Basic loader, sigh) the following Basic program will demonstrate it in action.

```
10 MODE 1
20 LOCATE 10,10
30 PRINT "HELLO"
40 CALL &4000
```

The speed of the routine is much faster than you could hope for with Basic, or even using machine code to move each part of the screen individually. The only drawback is that the column that has been scrolled off the screen comes back to haunt you in a different row. This is not really a problem, but causes the nasty flickering that some games possess. So now you know.

Vertical scroll

The firmware gives you two routines that will scroll the screen vertically. The first is a direct

```
org &4000            ;Start of assembly.

test_key equ &bb1e
set_offset equ &bc05
get_location equ &bc0b
wait_flyback equ &bd19

 .loop
ld a,8               ;Test for left
call test_key        ;cursor key.
call nz,moveleft     ;If pressed
                     ;call moveleft.
ld a,1               ;Test for right
call test_key        ;cursor key.
call nz,moveright    ;if pressed
                     ;call moveright.
call wait_flyback    ;To reduce flicker.
ld a,66              ;Test for ESC.
call test_key
jr z,loop
ret                  ;Return to Basic

 .moveleft
call get_location    ;Get current addr.
inc hl
inc hl               ;Change it.
call set_offset      ;Inform hardware.
ret

 .moveright
call get_location    ;Get current addr.
dec hl
dec hl               ;Change it.
call set_offset      ;Inform hardware.
ret

end                  ;End of assembly.

100 'Basic poker
110 MEMORY &3FFF
120 a=&4000
130 READ b$
140 IF b$="*" THEN 180
150 POKE a,VAL("&"+b$)
160 a=a+1
170 GOTO 130
180 PRINT "Code installed":END
190 DATA 3e,08,cd,1e,bb,c4,1b,40,3e,01
200 DATA cd,1e,bb,c4,24,40,cd,19,bd,3e
210 DATA 42,cd,1e,bb,28,e6,c9,cd,0b,bc
220 DATA 23,23 cd,05,bc,c9,cd,0b,bc,2b
230 DATA 2b,cd,05,bc,c9
240 DATA *
```

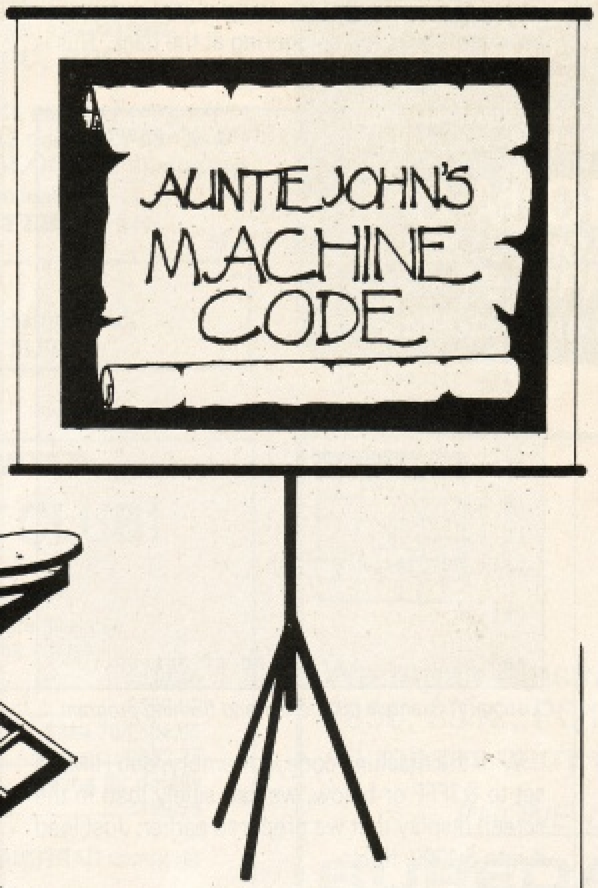
Listing II: Shifting the screen to the left or the right

equivalent of the horizontal scrolling program we have developed, SCR HW ROLL at &BC4D. The routine handles both up and down scrolls by looking at the B register. To scroll down, B must be zero and to scroll up it can be any other value. Listing III shows an example of how to scroll the screen up 10 times.

There are several points to look out for here:

(1) We must preserve the contents of the BC register pair because we use it twice – once as a loop counter, and once to control the scrolling direction.





(2) We must set the A register before calling the routine. This value determines what colour the new line scrolled on to the screen will be.

It is not simply the ink colour, but a specially encoded value. For the computer to draw a pixel on the screen it must calculate a value to represent the colour of that pixel in the screen ram. This is a bit tricky; it depends on the ink and the current screen mode. But there is a firmware routine called SCR INK ENCODE at &BC2C that, given an uncoded (normal) ink value, will return the encoded value. So to make the new line appear in INK 3, we load A with 3, call the encoding routine, then carry on as normal.

The second scrolling routine in the firmware, SCR SW ROLL, is done totally by software. It isn't nearly as fast or smooth. However, it does allow us to scroll any one section of the screen at a time.

SCR SW ROLL	&BC50
A	encoded ink
B	0 or non-zero (scroll down or up)
H	leftmost column to be scrolled
D	rightmost column to be scrolled
L	top row to be scrolled
E	bottom row to be scrolled

Figure I: The registers and parameters needed

Again, B controls the direction of the scroll and A the colour of the new line, but SCR SW ROLL (&BC50) must also be told the part of the screen it is to work on. Physical screen co-ordinates are used, the same as those used by the Basic LOCATE command but with one subtracted from them. For example a Mode 1 screen has top left physical co-ords of 0,0 and bottom right co-ords of 39,24.

The registers must be supplied with data before the routine is called. See Figure I.

Setting modes

The firmware routines SET MODE and GET MODE are the machine code equivalent of the Basic MODE command. The parameters are passed in the A register. For example, to make the computer run in 80-column mode:

```
set_mode equ &bc0e
ld a,2
call set_mode
```

Setting inks

SCR SET INK (&BC32) is like the Basic INK command, and takes its parameters in the A and BC registers: A = ink number, B = first colour, C = second colour.

SCR SET BORDER controls the border colours and uses the A, B and C registers in the same way as SCR SET INK. Remember that the colours can be both the same or they can be different, in which case they will alternate.

SCR SET FLASHING sets the flashing rate. It uses the H and L registers to hold the flash rates, the same as those issued from Basic in a SPEED INK command.

Listing IV sets INK 1 to flash between bright red and bright blue, the border to black, and the flash to a brain-numbingly fast rate.

Not a very difficult program to understand is it? This is how you would set up the screen and colours at the start of your machine code masterpiece.

```
org &4000           ;Start of assembly.

ink_encode equ &bc2c
fill_box equ &bc44

ld a,1
call ink_encode

ld h,5
ld d,34
ld l,5
ld e,19
call fill_box

ret

end                 ;End of assembly.
```

Listing V: Example box filling program

A very fulfilling routine

Just when you think that you couldn't get any more excited with the screen pack firmware calls, Amstrad has included two that will fill rectangles anywhere on the screen for you. Although not as flexible as Basic 1.1's FILL command, the box fills can come in very handy if you want a box drawn in a hurry.

There are two routines for you to play with – one which uses a screen address and one which uses the more user-friendly LOCATE co-ordinate system. Guess which one we're going to look at? Yep, the easy one.

SCR FILL BOX at &BC44 needs to be told five things; what colour the box is going to be, and where the four sides are going to be. Again, physical co-ordinates are used, and they are laid out in exactly the same way that SCR SW ROLL has its data presented to it, except that HL and DE describe the boundaries of the box to be filled instead of the boundaries of the box to be scrolled. See Figure I again.

The more observant of you may have noticed the use of encoded inks again. So to fill a box in INK 1 in the middle of a MODE 1 screen, you would use the code in Listing V. This routine is quite fast, and should come in handy for setting up title pages and the like.

Well, we are getting near to the end of the screen pack. There are some routines to return the address in memory of a given pixel with a given character position. Vertical and horizontal lines are also handled from within the screen pack giving you the opportunity to rewrite the standard DRAW routines. I would rather eat an entire collection of Peterborough telephone directories than attempt this though.

Next time we will look at some more firmware calls, and might even do something useful with them. Bye for now.

AMSTRAD *Computer User*

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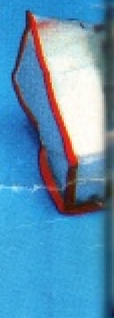
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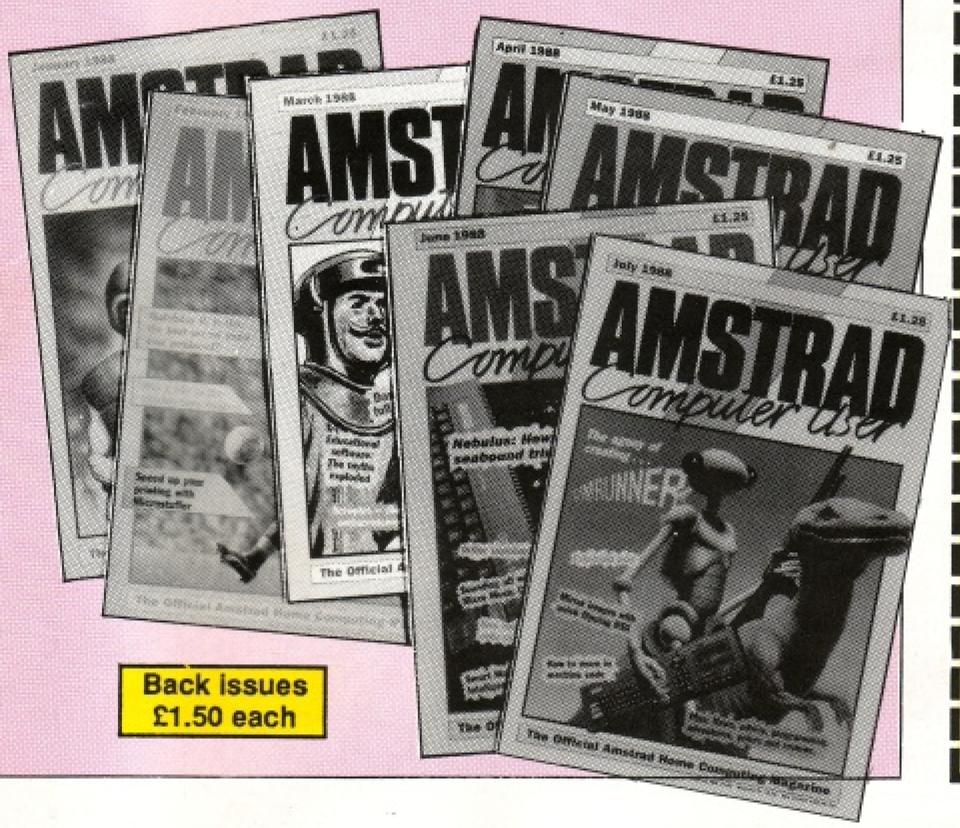
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